

UNIVERSITY OF PENNSYLVANIA

THE WHARTON SCHOOL

MGMT 239

Professor Lafkas

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THE WHARTON SCHOOL

MANAGEMENT

1900

Spring 1900

University of Pennsylvania

Philadelphia, Pa.

The University of Pennsylvania is a leading institution of higher learning in the United States. It was founded in 1639 and has since that time been a center of scholarship and research. The Wharton School, which was founded in 1881, is one of the most prominent business schools in the country. It is a part of the University and is devoted to the study of commerce and business. The school has a long and distinguished history and has produced many of the leading business leaders of the country. It is a place where students can receive a thorough education in business and where they can develop the skills and knowledge necessary for success in the business world.

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Appex Corporation

In May 1988, six months after being made a partner at the Boston Consulting Group, Shikhar Ghosh decided to accept a position as Chief Operating Officer of Appex Corporation, with the understanding that shortly thereafter he would be made Appex's Chief Executive Officer. At BCG, Ghosh's specialty was organizational structure, particularly how to create rapid-response organizations. "I left BCG with my head full of ideas of how to structure organizations. I was eager to try out my ideas at a small company where there was little hierarchy," Ghosh stated. Appex, at the time, was a relatively small company, with twenty-five employees, and \$2 million in revenue. The company was entrepreneurial, technology-driven, and loosely structured. But it was losing money rapidly and the venture capitalists who had invested in the firm were hoping that Ghosh would be able to turn it around. Ghosh commented on the nature of Appex when he arrived:

Everybody just did what they felt like. For instance, customer service people were supposed to start at 8:00 a.m. They wouldn't arrive until 10:00 a.m., but they would work until 2:00 a.m. Everybody did things on their own time, and the attitude toward the customer was—"We'll call you back."

The chief financial officer of one of our customers told me of an incident he experienced at Appex. He arrived at 8:00 a.m. to find few employees present. He waited for two hours. The Appex group was playing basketball at a court nearby, and showed up at 10:00 a.m. Sweaty, and in their athletic clothes, they greeted him. Needless to say, we lost that account.

Reflecting on his initial impression, Ghosh stated: "I knew what had to be done. Appex needed control and structure."

Company Background

Appex Corporation, headquartered in Waltham, MA, provided management information systems and intercarrier network services to cellular telephone companies. The company was founded in May 1986 from the merger of Appex, Inc. and Lunayach Communications Consultants (LCC). LCC specialized in the design and engineering of cellular radio networks for cellular companies. Appex, Inc., founded in 1984 by Brian E. Boyle, focused on management information systems for the cellular industry and credit scoring systems for financial service companies. The consolidated company, named Appex Lunayach Systems Corporation (ALS), integrated LCC's

Research Associate Julie A. Gladstone prepared this case under the supervision of Professor Nitin Nohria as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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company when he joined in October 1988: "If you were interested in something, you just did it. Nobody had any sense of what their job description was."

The structure was very informal and fluid. Employees were focused, committed, and hardworking, and worked in close interaction with each other. As a result, Appex was very responsive and effective at getting things done quickly and relatively cheaply. The company's ability to bring products to the market quickly and Boyle's innovative technical solutions enabled the company to compete against established firms that had an abundance of resources, such as GTE. At one point, four of Appex's competitors, including GTE, Cincinatti Bell and McDonnell Douglas, put out a RFP (request for proposal) to establish a joint entity called ACT, which would address a particular service need in the cellular industry. ACT had all the resources, expertise, and capital it needed. While ACT was busy planning how to address the need, Boyle created a solution and installed it in the market. As a result, ACT was disbanded.

In the early days, the market was growing quickly and so was Appex. The company was project-based, meaning work was organized around projects. As the number of projects increased, people worked on more and more projects at once. When the workload began to seem overwhelming, the company hired more people. Appex was spending cash quickly and not monitoring its expenses.

Shikhar Ghosh was recruited in May 1988 to head Appex because Appex's investors believed that the company was spending cash too haphazardly. Ghosh had graduated from Harvard Business School in 1980, and had spent eight years as a consultant at BCG. The investment group that owned Appex Corporation had hired other BCG consultants to run companies, and targeted Ghosh to bring more control to Appex.

Ghosh realized early on that the atmosphere at Appex was changing from "entrepreneurial" to chaotic. People arrived at work and would react to whatever crisis the company happened to face that day. There was only "fire-fighting" and no development of an underlying planning structure. Anything a week away had no priority. Denise Allen, Sales Manager, described the way in which the organization functioned: "Brian (CEO) came up with ideas. Michael (Engineering Manager) converted them to reality. I sold the service. Mark (Finance Manager) made sure we didn't run out of money." Nobody had time to plan schedules or meetings. Eventually, it became difficult to accomplish basic tasks, such as the preparation of price analyses of new products. People who could not withstand the chaos quit.

Customers began to complain too. One customer claimed to have called 150 times before he received a response. Appex could not address all the technical assistance requests of customers. Those customers who received assistance were pleased with the quality of Appex's support, but other customers requesting assistance did not receive any. The volume of customers and orders had increased, and the company could not handle the increased demand.

Appex started to fall behind schedule and to miss installation dates. The company experienced failures in product development. For example, one developer would not know what another developer was doing. So, developers, working on the same system, would develop software codes that clashed, causing the system to crash. Information flow, in general, was becoming more difficult.

There was no financial planning, and all planning seemed useless. For example, in a plan written in June 1988 Appex predicted it would go from 36 people by the end of calendar year 1988 to 55 people by the end of calendar year 1989. At the end of 1989, the company had 103 employees. (See **Exhibit 1** for forecasted and actual growth in number of employees.)

Ghosh recognized that the way in which Appex functioned had become unproductive: "This complete project-orientation and looseness did not work." Ghosh believed that Appex needed to address both long-term planning issues and immediate issues, such as who should attend which

meetings, how to pay people, and how to begin employees on a career path. There had to be defined areas of responsibility. As Ghosh explained, "We needed a system of accountability. We needed structure."

Innovative Structures

As the new CEO of a rapidly growing company, Ghosh was eager to try out some of the innovative organizational structures he had been exposed to or had envisioned as a BCG consultant. The first structure he implemented was a circular one similar to what he had seen being used by Japanese companies.

A circular structure meant that there were concurrent circles expanding out from a middle circle. At Appex, the innermost circle contained the senior executives. The next circular layers out included the managers of functions, and the employees in the functions. In the environs around the circle were Appex's customers. The intention of the circular structure was to create a nonhierarchical organization in which information flowed continuously and freely within the organization and between the organization and its environment. (See **Exhibit 2** for circular organizational chart.)

Ghosh soon realized that a circular structure did not suit the company for several reasons. One reason was that employees could not relate to the circular structure. They were completely unfamiliar with the structure. The new hires, in particular, who were not accustomed to Appex's culture, could not understand how they were meant to fit into the organization. Ghosh stated: "People who joined Appex expected to see a more traditional organization chart. They did not know with whom to talk to get things done. They did not know the power structure and who had authority to make which decisions. They did not know how their performance was evaluated. The circular structure did not answer any questions or achieve anything." Another reason the circular structure did not work, according to Ghosh, was because "a mentality developed that the customer was the enemy." A third reason was that it was completely geared toward responsiveness, not toward any form of planning. Those tasks that required planning did not get done.

He next tried a horizontal structure—the traditional, vertical organization chart turned on its side. The employees did not respond enthusiastically. For instance, when Paul Gudonis, Senior Vice-President of Sales and Marketing, called a meeting of his new direct reports the first day the horizontal structure was implemented, nobody showed up for the meeting.

Within two to three months, it became clear that the innovative structures were inadequate. "My creative notions about network, nonhierarchical, team-oriented structures blew out the window," Ghosh stated. Following the failures of his innovative structures, Ghosh adopted a new strategy: "I realized that I first needed control, and the way to get it was through a traditional, hierarchical structure. After I achieved a minimal threshold of control, I could begin to break down the structure. Bureaucracy has some purpose."

Hierarchical, Functional Structure

In February 1989, Ghosh established a hierarchical, functional structure. The functions were organized as teams: there was a sales/marketing team, a software development and services team, an engineering and technology team, an operations team, and a finance, human resource, and administrative team. In creating the functional structure, Ghosh was faced with several issues: How many distinct functional teams should he create? For example, should marketing be a separate group or part of sales? Should there be separate finance and accounting and human resources teams? Who

should head each of the teams? Could the personnel given certain management responsibilities now handle the responsibilities that would come with the rapid growth of the company? For example, could the person made vice-president of sales at a time when sales were \$2 million/year handle the sales function when sales were \$20 million/year?

While firmly believing in the importance of hierarchy, Ghosh wanted to diagram the structure in a way that minimized the sense of hierarchy. He illustrated the functions as reporting to him in a horizontal fashion. This displeased the board of directors that wanted Ghosh to present a traditional diagram of a hierarchical organizational structure. (See **Exhibit 3** for functional organizational chart.)

At first, titles were given out rather informally. Soon it became apparent that people cared a great deal about what titles they were given. For example, someone wanted to be called senior vice-president, not vice-president. Also, people became concerned with desk locations, i.e. who sat where. Ghosh commented, "Even though we were a relatively small company, politics came into existence."

The team structure succeeded in focusing the company on completing tasks. The sales people now focused on sales. The financial people did financial planning. The structure improved the company's basic capabilities. There was a system of accountability, in which the team heads reported regularly to Ghosh. As Ghosh reflected, "I was involved in everything."

After the functional structure had been in place a few months, various things began to occur. The heads of each team displayed a natural tendency to create sub-functions within their team. For example, the sales team divided into sales and marketing, and then into sales, marketing, and product management. Each of these functions had a manager and then assistant managers. Soon national sales managers and regional sales managers were appointed, and they managed subgroups. All these changes within the sales team occurred within six months of the establishment of the functional structure. (See **Exhibit 4** for the sales team's organizational structure by August 1989.) Every three to four months after the functional structure was originally established, the organizational chart grew vertically and horizontally; more layers were added and more sub-functions created.

Over time, the teams became polarized. For example, in the past, Appex had an engineering department run by one person. The distinction between engineering and operations, that is building a system and operating it, did not exist. After an operations team was established, the operations people proceeded to clearly define their area of responsibility and to restrict engineering's involvement in operations' functions. The structure inhibited a working relationship, and Appex ended up having to spend more money on system development and operation than previously.

The role of "personalities" became more pronounced. Standards were set by individuals rather than company policy. The way in which tasks were handled reflected the influences of particular personalities more than notions about how best to accomplish a task. Ghosh told about a meeting he had with the engineering and operating people that went terribly, until Ghosh devised a plan: "Midway through the meeting I told everyone to take out their egos and put them in an imaginary box—the ego box, which we then tossed out the window. After that, the meeting was more productive."

Another ramification of the functional structure which proved problematic was that the source of authority was functional, not managerial, expertise. The head of engineering was the best engineer. The same held true for the other functions. Ghosh hired outside people experienced in management to head teams, but they did not know the product as well as did the people in the team. It was often difficult for new managers to gain the respect of the teams because employees had not valued managerial competence traditionally. Ghosh also found that it was very difficult to measure managerial competence.

In addition to finding people with managerial expertise, Ghosh needed people with broader functional expertise. Employees, who had the skills appropriate to a small company or a certain company culture, did not necessarily have those skills needed in a larger organization. Ghosh adapted to the expanding demands by reshuffling people, hiring new people, and promoting and demoting people. For example, some of Appex's first engineers were "great band-aid" people, according to Ghosh, but did not have the skills to address the emerging need of the company—quality control. Ghosh hired engineers better skilled in quality issues, and had them assume responsibility for the engineering function. The company, in general, had to learn to value new types of aptitudes and to adjust to the attendant changes in the power structure of the company.

In March 1989, four weeks after joining Appex, Paul Gudonis, Senior Vice-President of Sales and Marketing and General Manager at the time, submitted a letter to Ghosh; in it, he expressed his observations of the existing functional structure's deficiencies, and proposed that Ghosh set up product teams. Gudonis believed that there should be separate product teams for each of Appex's main products, and that each product team should be comprised of a product team manager and representatives from the functional areas. The product team managers would write business plans for the products, and integrate the functions represented in the product teams. (See Exhibit 5 for Gudonis's letter.) Ghosh liked Gudonis's ideas and gradually began to hire product managers and to establish product teams. The product teams co-existed with the functional teams. Through this arrangement, the functional teams were informed about product happenings on a daily basis. Although the creation of product teams ameliorated some of the problems of the first functional structure, it generated new problems.

Within the multi-functional product teams, there was no system that specified who had the authority to make which decisions. For example, who had the right to decide a product's features? Should sales people be allowed to decide discounts? Should the product manager be allowed to tell engineering what its priorities should be? The product teams became larger and larger, and the question of who had authority became more troublesome. The conflict between product managers and operations people became acute. The product managers, who developed marketing strategies, often did not know the products as well as the operations people; thus, the operations people believed that their ideas for the product were what should be implemented. According to Ghosh, "there were constant battles among the functional representatives in the product teams. There would be several people in the product team working on one account, each of whom looked at the same problem a different way and none of whom had the authority to make the final decisions. We couldn't afford this."

The product teams did not know where their authority ended. For example, product managers would try to set a sales price, and would be overruled by senior management. The engineering person on the product team would try to commit to the product team's engineering plans, but had no authority to change the engineering team's schedule. Each product team would want its product to be the highest priority of the engineering department. Every product team wanted the most senior person from the functional team to be on its team, in the hope that that person would have more influence within their respective functional team. A solution to the authority problem was to have senior executives attend all product team meetings and make all decisions; some senior managers did this for a while. For example, the head of operations spent over 40 hours per week in product team meetings. However, this was not a feasible solution because the senior executives needed time for their other responsibilities.

The product teams also generated more resource allocation problems, both within the product teams and among them. The product teams had no system to set priorities about how resources should be divided within the team. In addition, the corporate management team was faced with new allocation decisions. For example, each product team wanted a strong marketing department, which made sense, but it was difficult for corporate to justify spending so much on marketing when other functions lacked some resources.

In response to the authority and resource allocation problems, Ghosh created business teams. The business teams were intermediaries between the product teams and the corporate management team, and had the authority to make decisions, including resource allocation decisions, regarding the products. The business teams included representatives from senior management. Those product teams that operated on the same network and shared the same customer base reported to one business team. Business teams were established in November 1989. (See Exhibit 6 for product team/business team organizational chart.)

Overall, the functional structure overlaid with a product team/business team structure proved to have many shortcomings. One shortcoming, in Ghosh's words, was that "there was more tail than tooth." He explained: "In the past we had many revenue-producing people, people who were consultants, dealt with customers, built products. Now we had a lot of people planning, counting, and greasing the wheel." As the company created new products and extensions of existing products, there were more product groups, meetings, and layers of management. The company had approximately 120 employees, many of whom were recent hires. Bob Lentz, Senior Vice-President and General Manager for the IS division, explained that training costs were high: "We kept stretching the organization, and bringing in new people. The new people generally had no experience in the cellular industry because the industry was only seven years old. They had to be introduced to the industry and the product." The infrastructure costs kept escalating, and this was problematic because the company's pricing policy relied on Appex being a very lean organization.

Moreover, customer focus diminished. People became more concerned with internal processes and issues than with meeting customers' needs. For example, people began having many meetings about how to communicate, and how the product teams/business teams should make decisions.

Finally, people became less concerned with meeting company-wide financial goals. One reason for this was that there was no system of profit and loss accountability. Ghosh explained: "There were too many variables for any individual to control in getting a task done, so it was unclear who was responsible when something did not happen. People could get away with a 'who-cares-attitude.'" Profit and loss statements at the end of the month did not meet expectations. Ghosh stated the general outcome of functional/product team/business team structure: "Appex moved from an organization where everybody was doing everything to one with a lot of process and where things were not getting done." It was time for a structural change.

Divisional Structure

In August 1990, Ghosh implemented a divisional structure. He established two broad divisions (businesses): Intercarrier Services (ICS) and Cellular Management Information Systems (IS). Appex's products logically could be divided into one of the two businesses. At the same time, he created a third division, Operations, which included utility functions that serviced the two businesses. Each division had one head who was responsible for the entire division and reported to Ghosh. The vice-president of finance and administration and the director of human resources also reported to Ghosh. (See Exhibit 7 for divisional organizational chart.)

The divisional structure had many advantages. It improved accountability, budgeting, and planning. Employees focused on meeting financial targets. Within divisions, there was a great deal of cooperation. Ghosh was able to spend less time addressing the day-to-day operations of the company and more time planning its strategic direction. Ghosh commented on how his role changed: "One year ago, I was involved in everything. Under the functional structure, all information came to me. In the divisional structure, there was a lot of information I didn't see. We keep moving to the point where the company could run without me."

In time, the divisional structure generated its own problems and challenges. Some problems of the functional structure persisted after the implementation of the divisional structure. One such problem was resource allocation. The senior executives' decisions about resource allocation were not always perceived as equitable. Ghosh explained: "People think senior management is violating some intrinsic equity code, but sometimes it is necessary to allocate resources in a way that to some might seem unjust. The problem of shared resources has led to antagonism between the divisions." Ghosh provided an example about the politics involved in resource allocation: The person made head of IS was previously the company's chief financial officer. He was told about his new position three days before the plan was implemented. After it was implemented, members of the ICS group accused him of securing resources for IS when he was still chief financial officer. As Ghosh stated, "There was a lot of second guessing going on." Ghosh decided to remove all development money from each division, and have the divisions present funding requests on an individual project basis.

Another resource allocation issue was that divisions wanted control over all their resources; they did not want to share resources. For example, each division wanted its own database manager. When the first database manager was hired for the whole company, the person was told to report temporarily to one of the division heads. Right away, that database manager was subsumed into that division, and Ghosh had to hire a database manager for the other division. Ghosh found that he often had to buy things in triple because that was necessary or because it was too difficult to coordinate the sharing of resources among the divisions.

A second problem with the divisional structure was that while there was cooperation within them there were high walls between them. There was little communication flow across divisions, and little cross-pollination of ideas. Ghosh noted that once the divisional structure was implemented, he received few new product development ideas. Appex's forte had always been new product development. Ghosh hypothesized that certain products did not get developed because they did not fall neatly into the narrow confines of one division or the other. He received many product extension or improvement ideas, but few brand new ideas.

Ghosh hoped to spur product development and communication across divisions by setting a company theme of quality and creating multi-divisional, multi-functional quality teams. He also established other centralized teams, such as a centralized product development team (in addition to the divisional product development teams). He rotated employees across divisions, and made the head of one of the divisions the head of the centralized product development team.

Another phenomenon Ghosh observed was that after a short while the divisions began to act like small companies. They each developed their own business procedures. For example, each division wanted to use a certain technical platform. The company, though, could not support more than one technical platform. As each division grew (in fact, each division was becoming two to three times the size that Appex had been when it was organized functionally), the division faced structural questions similar to those Appex faced as a young company. For example each division questioned whether it should divide itself into functions or if that would impede cooperation within the division. The divisions began to "play games" with their financial statements (e.g. setting aside an unreported pool of money) to meet financial objectives. As the divisions subdivided into more layered structures, each sub-division "played games" with its numbers, and it became difficult for the senior executives to gain an accurate sense of the financial status of the company.

Ghosh's Structure Philosophy

Ghosh anticipated that the next structural change would be implemented in mid-1991. He believed that Appex's structure should be altered regularly: "Every six months by design I change the organizational structure. I changed it in January 1991, and I'll change it again in June 1991. We're growing at 10% a month. I feel when a company has grown 50%, it is time to change." Many

structural changes reflected employees' suggestions: "Changes come about because people identify a problem and propose a solution to me. I get confidential suggestions about what structural changes to make."

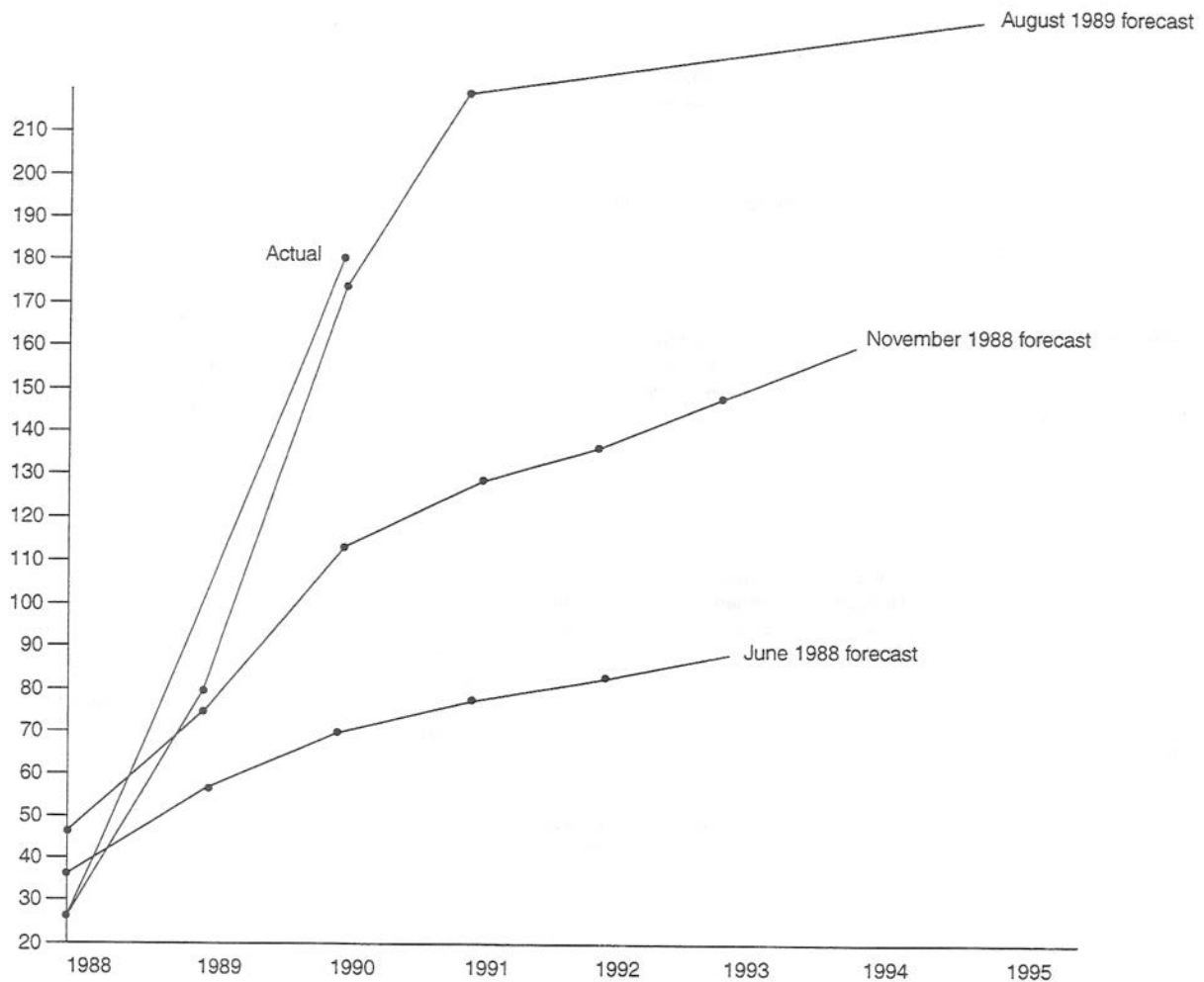
One suggestion, proposed by Ted Baker, was to have the operations division's functions be incorporated into the other two divisions, and operations as a division be disbanded. Data processing would be the exception; it would be a centralized, shared function. In February 1991, Baker stated: "The current structure is untenable for any length of time because the divisional heads want to control all the major components of their respective divisions. I think the divisional structure as it exists now will only last one more month." He expected that a third division—international business—would be established to position Appex abroad.

Ghosh was always surprised by the immediacy of the impact of structural changes: "What's striking to me is how quickly behavioral changes occur in reaction to structural changes." He asserted that although structural changes created some anxiety among employees, they were necessary: "As we hire new people and the business changes, we need to change the structure to match the people and the business with the structure. People feel a lot of confusion. I tell them, 'whatever you're sure of will change.'" He mitigated the uncertainty caused by structural changes by clearly communicating company financial targets. Targets established stability. Ghosh stated: "I create the semblance of control by setting targets. Targets send a clear message that everyone can understand. Everyone has a point they can focus on."

Ghosh also asserted that changing the structure involved more than cosmetic changes to an organization chart or changes in the reporting structure. The incentive scheme, resource allocation system, and other systems had to reinforce the structure. For example, in 1991 Ghosh established a bonus system, which in his view seemed to be fostering teamwork.

Post-EDS Acquisition

In October 1990, Electronic Data Systems (EDS), a \$6 billion information systems management company owned by General Motors, acquired Appex. As a division of EDS, Appex had to follow EDS's requirements, such as its financial planning systems, resource allocation systems, and administrative procedures. Ghosh's role changed after the acquisition: "I spend my time dealing with EDS and planning the strategic direction of Appex within EDS." Following the acquisition, Appex's challenge was to work out its own divisional structure and structural changes in the context of its role as a division of a larger, bureaucratic organization.

Exhibit 1 Forecasted and Actual Growth in Number of Employees

Calendar Year End	Number of Employees			
	June 1988 Forecast	November 1988 Forecast	August 1989 Forecast	Actual
1988	36	45	26	26
1989	55	75	79	103
1990	66	112	176	180
1991	72	130	265	
1992	77	134	369	
1993	83	145	480	
1994		159	586	
1995			675	

Exhibit 2 Circular Structure

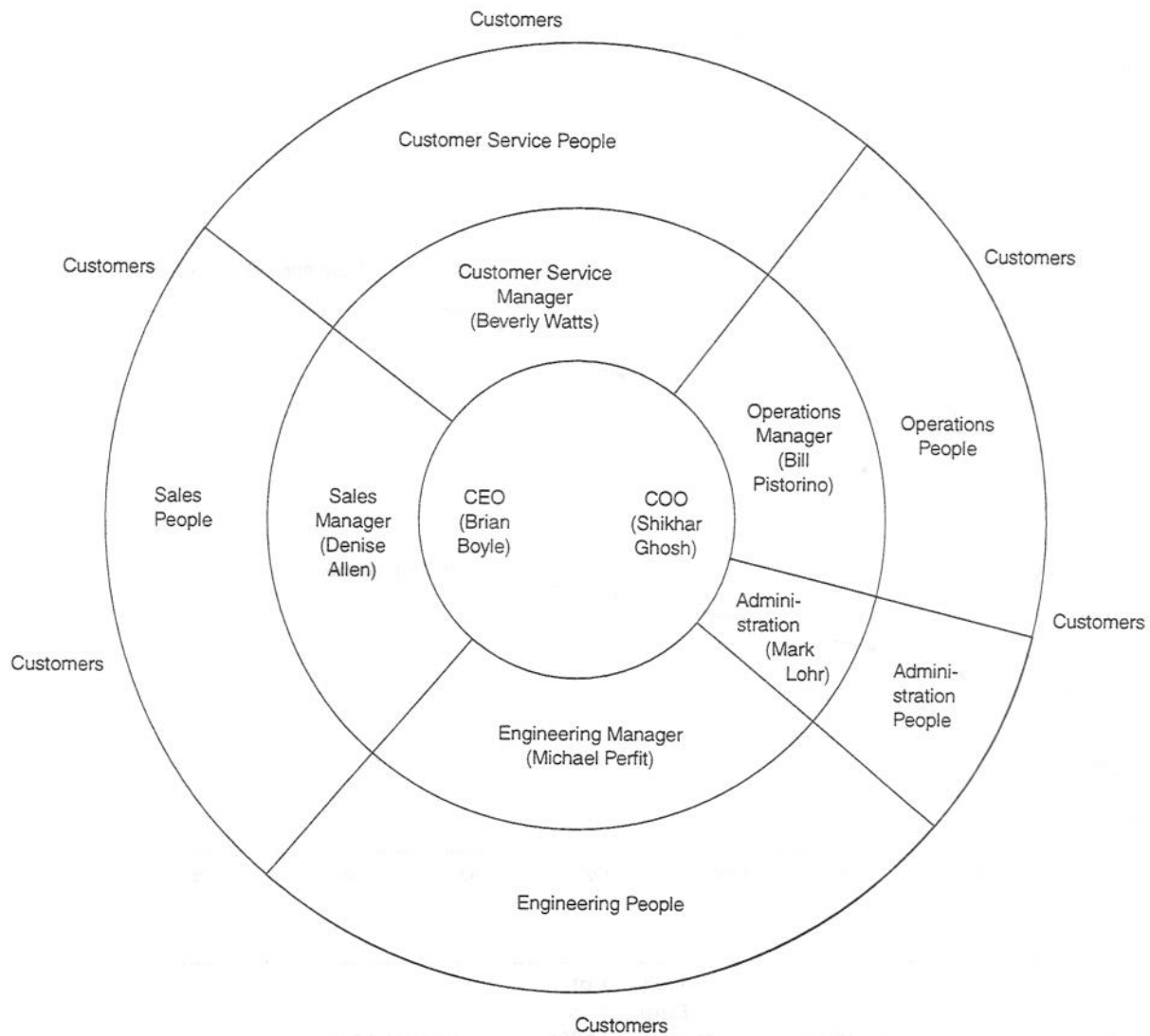


Exhibit 3 Functional Structure

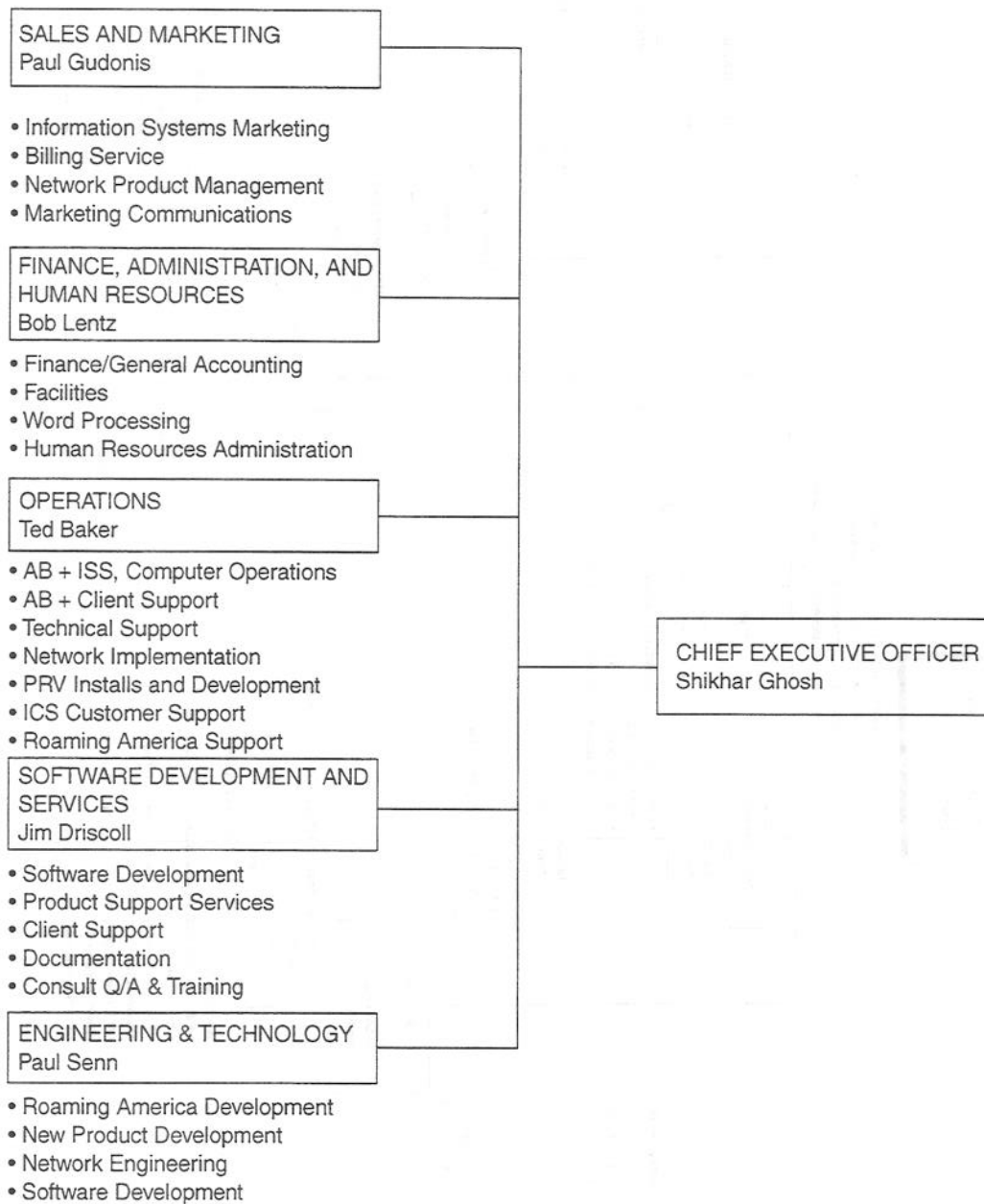


Exhibit 4 Sales and Marketing Team's Organizational Structure (August 1989)

MARKETING AND SALES TEAM

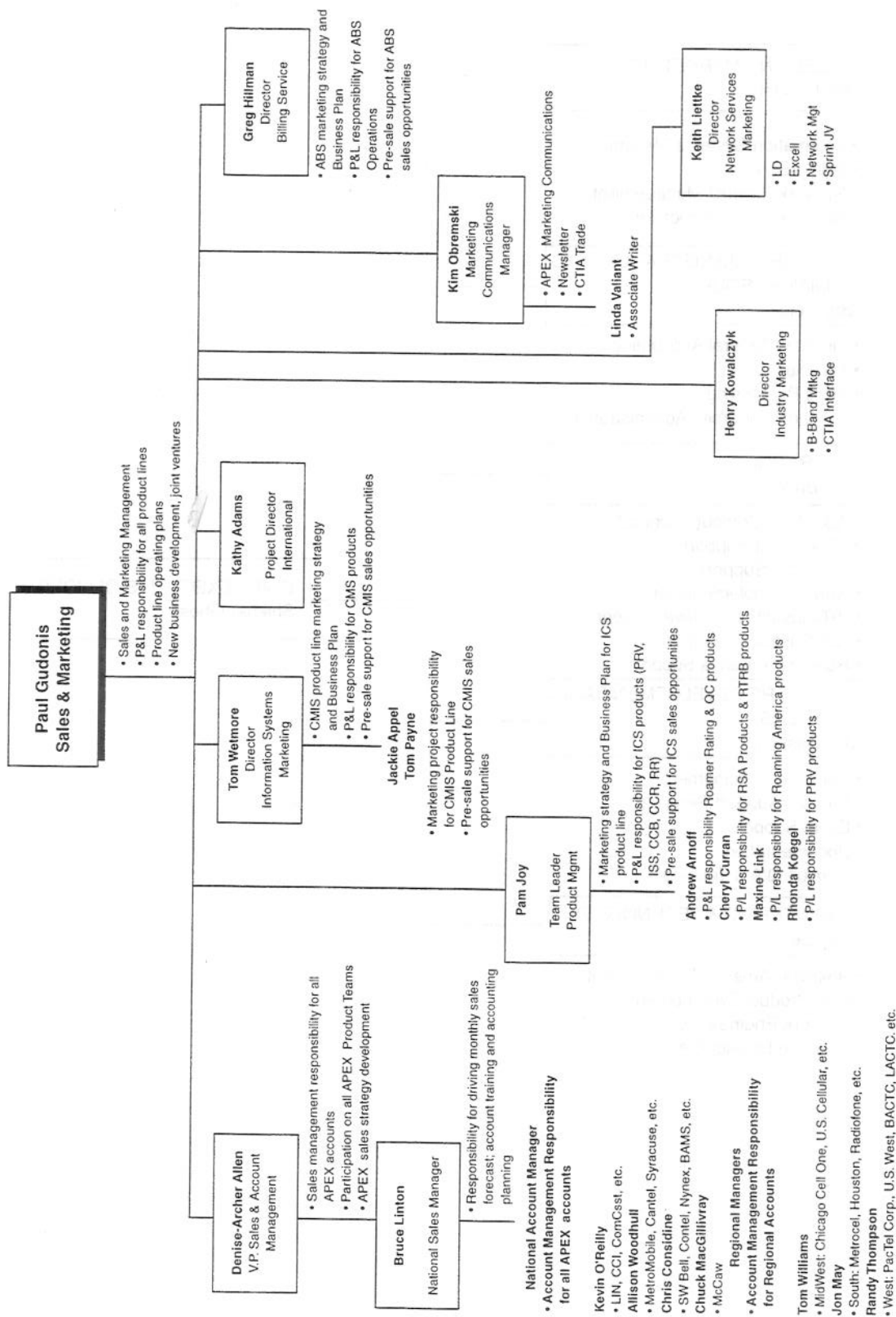


Exhibit 5 Paul Gudonis's Organizational Audit (March 1989)**Observations about functional structure:**

1. There is no business/operational plan, just fire-fighting and multitudes of projects. There are no financial forecasts.
2. Nobody, except the president, is acting as "integrator" with responsibility for products and projects across departments.
3. The company's growth has out-stripped the management capabilities of certain personnel.
4. There is no "checks and balances" system among departments.
5. No one has responsibility for the system architecture, capacity planning, and the integrity of the network.
6. There is limited senior management teamwork.
7. There is a lack of accountability, unclear job definitions, and people do not know who is responsible for what.
8. There is a lack of tactical planning, and scheduling of meetings and trips. Meetings are called at last minute.
9. The culture permits laxity in meeting commitments. People take a "who cares" attitude.
10. There are staffing delays because of recruiting problems. There is no evaluation about why we are not getting the people we need.
11. The technical culture implies an "it's good enough" attitude rather than an effort to truly meet customers' needs.

Recommendations

1. A "3-page business plan" should be created for each product line (CMIS, ABS, PRV, ISS, RoamAmerica). The plan should include financial information, quarterly tasks and milestones, departmental tasks, and staffing requirements.
2. There should be product managers responsible for product teams. The role of product managers should be announced to the company. Product team members should be appointed from the functions. Product managers should be coached about how to do their job.
3. The company should reduce the scope of management responsibilities, and hire product managers from the outside.
4. A product team organizational chart should be diagrammed. The chart should show the responsibilities of the product team, and the relationships within the product team and between the product teams and senior management.

5. There should be regular meetings to review the progress of the structure.
6. Clear job descriptions should be written, and people should be told what their responsibilities are.
7. Everybody should be required to write four week advance plans.
8. Senior management should lead the way by setting an example of good managerial practices.

Example of Product Team Structure for RoamAmerica

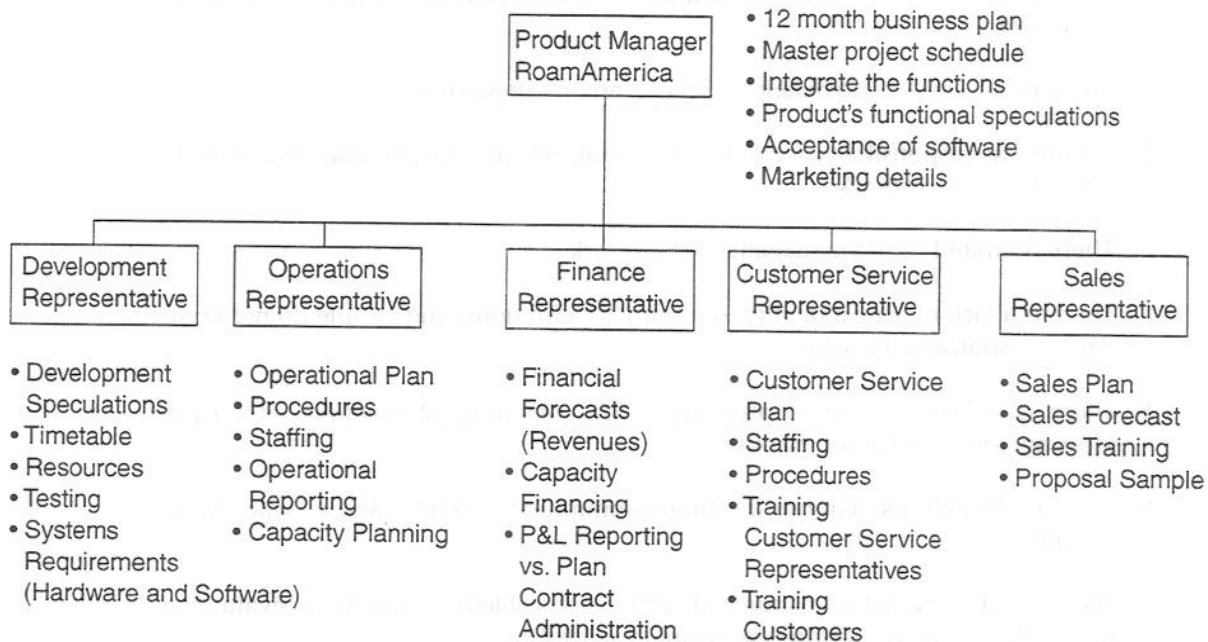
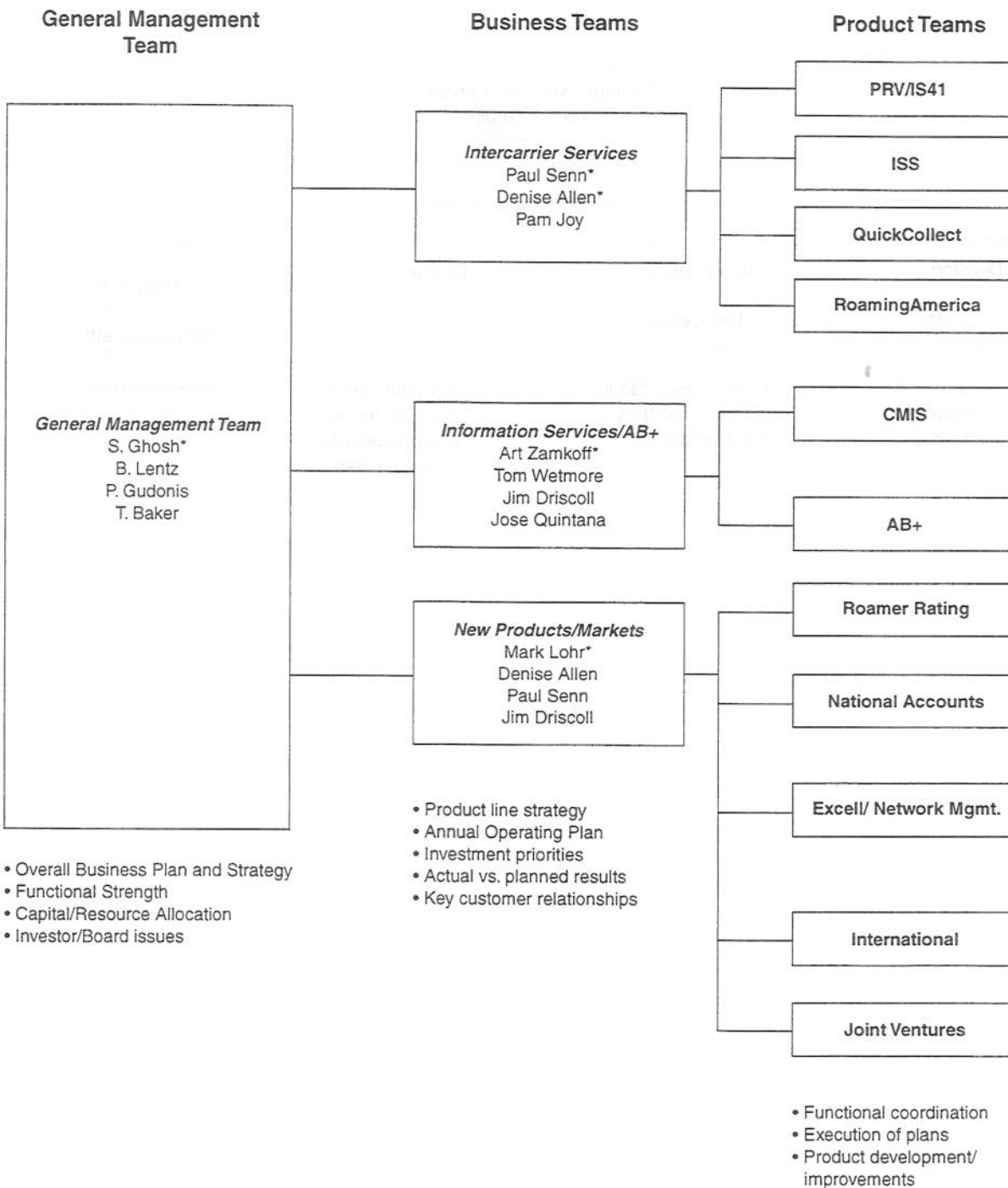
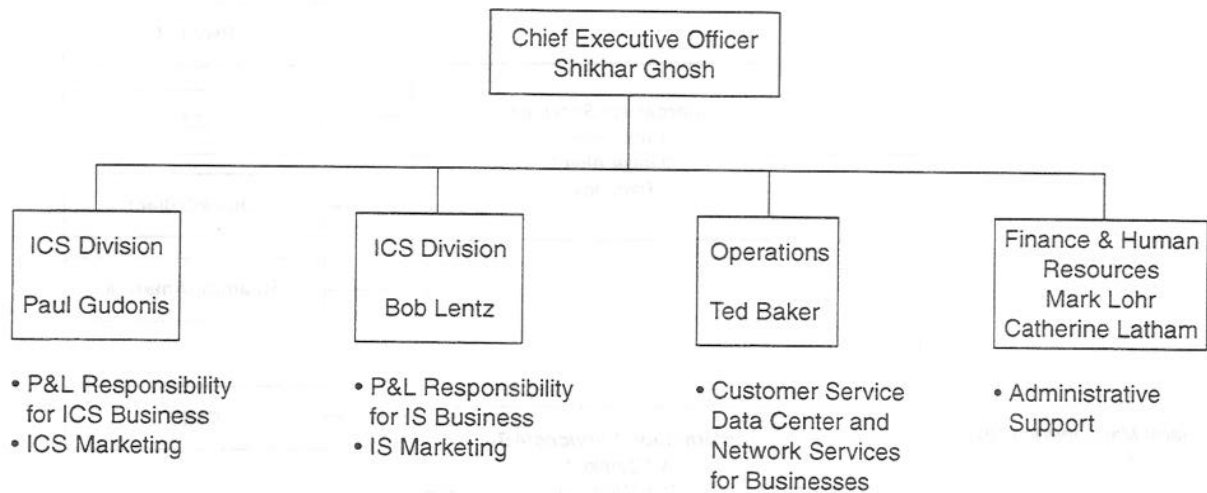


Exhibit 6 Product Team/Business Team Structure



* Chairpersons

Exhibit 7 Divisional Structure





2

WHARTON REPROGRAPHICS

SAP America

In just three years, SAP America (the abbreviation stands for Systems, Applications, Programs in Data Processing, and is pronounced S-A-P) had gone from relative obscurity to being the phenomenon of the corporate computing world. By the mid-1990s, it was well on its way to becoming a billion-dollar company, and the derivative business powered by its engine was estimated at over \$9 billion (see **Exhibit 1**). Such growth had placed great strain on the organization's regionally decentralized structure.

In April 1996, Jeremy Coote, the newly appointed president, called a meeting of senior executives to decide how to reorganize for the future. One of the resulting changes was that consulting activities became a separate line of business. Coote had subsequently charged Eileen Basho, consulting's new vice president, with two major tasks: developing a professional services strategy that would allow the company to move from global to mid-tier markets, and significantly reducing the time and costs of implementation.

Company and Industry Background

SAP AG, the parent of SAP America, was the world's fifth largest software firm and the leading producer of real-time, integrated applications software for client-server computing. Its R/3 product had quickly come to dominate the enterprise information systems (EIS) segment of the client-server market. R/3 software functioned as the central nervous system of a company, allowing an entire global enterprise to communicate and exchange data instantaneously and seamlessly throughout (see **Exhibit 2** for a more complete description of the product).

SAP AG was founded in Walldorf, Germany in 1972 by four young software engineers whose vision of an integrated software package had been turned down by their employer, IBM. Seven years later, they launched their first major EIS product, R/2, which was designed for mainframe computers. In 1989, they took their company public. Five years later, SAP's market capitalization was \$15 billion, and over 75% of the common stock was still owned by the founding families.

Three of the founders had remained active in the daily running of the company, and continued to sit on the Executive Board. They were described as highly accessible, financially conservative, and as having kept the company "outrageously flat." They ran SAP AG on the basis of informal working relationships honed over long periods of time, consistently invested 20%-25% of gross revenues in R&D, capitalized nothing, carried no debt, and did not book revenues until products were delivered. Almost 25% of the company's 7,000 employees were in R&D, and half were in professional services, which at SAP consisted of consulting and training.

Research Associate Artemis March prepared this case under the supervision of Professor David A. Garvin as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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The German (or AG) Executive Board was tightly linked to the product development organization and was involved in a variety of strategic decisions concerning the product, such as the functionality to be incorporated in new releases. Besides the founders, board members included the two top executives from the R&D organization, and Paul Wahl, who joined the company in 1991 as vice-president for worldwide marketing but had spent most of his career in technology organizations.

Strategic Focus

In late 1991, prior to the R/3 launch, the AG board had spent at least two months discussing whether SAP should remain a product company, focused on selling software packages, or whether it should broaden to focus on solutions. Wahl, who had just joined the company, described the alternatives and some of the board's thinking:

A product has a defined functionality, and you hope to sell a lot of copies. So as a product company, you earn your revenues from license fees. A solutions company, on the other hand, gets a lot more of its revenues from services, and provides a more complete package that includes implementation as well as a wide range of other services.

But we knew that if R/3 were very successful and we were a solutions company, we would have to hire thousands of consultants. The board said, no, we are a product company. What we want is market penetration of our product. We want R/3 to become *the* business infrastructure, the de facto industry standard. So what we need to do is to sell as much software as we can, as fast as we can.

To do that, we needed strong alliances with partners. There was some concern that this choice could put us in a firefighting mode, where we had to fix our partners' mistakes. Saying that we were a product company also hurt the feelings of our own consulting people. But the choice focused us, and put even more pressure on R&D to develop a superior product.

The board then had to decide how much of the services market generated by R/3 it would pursue itself, and how much of the business it would leave to partners. SAP, it decided, would seek only 20%-30% of the R/3 implementation business. In the United States, it would initially pursue even less. R/3 was introduced in Europe on July 1, 1992, and three months later in America, where sales took off quickly and then skyrocketed in 1994.

Coming to America

SAP AG began to expand internationally in the late 1980s, and chose foreign subsidiaries as its vehicle. It established SAP America in 1988 as part of the Americas group, which also included Canada, Mexico, Latin America, and Australia. When the American subsidiary experienced management problems in mid-1992, top members of the German board parachuted in. After the dust settled, Klaus Besier became president, Wahl joined the American board and Hasso Plattner, SAP's co-founder and de facto chief technologist, became chairman of the Americas organization, a position he continued to hold four years later. Besier soon added the title of chief operating officer; he became CEO early in 1994. Besier was described by a senior executive as a "dynamic leader, a marketer par excellence, very directed and driven. He speaks well and has a strong physical presence. With Klaus, there is no pretense. What matters is getting the job done. His penchant is to build; the company has to be headed in a direction."

Charting a Course

To address the needs of the American market, Besier moved away from the German model in several respects, including the sales organization, target customer base, organizational structure.

Commissioned Sales Force SAP America had learned from R/2 that its product needed to be sold more heavily in America than in Europe, and that a strong sales force was required to compete effectively. Alex Ott, vice-president of global partnering, recalled: "We had no customer base, no market share, a handful of people, and a new product which ran on a new technology. We concluded that we must be quick on our feet, and have more feet on the street than anyone else." SAP America's managers decided that they needed a commission plan for R/3. Besier moved aggressively, putting the entire sales force (rather than just a pilot group, as had been agreed by the board) on commission. He also recruited more and more of the sales force from the ranks of professional salespeople, rather than engineers.

Target Customers Besier's aggressive, entrepreneurial sales force believed that it could close deals with very large companies. Their first multimillion dollar sale, to Chevron, proved to be a watershed for SAP. The deal closed in December 1992; it punctured the belief that multinationals were married to their mainframes. R/3 more than met Chevron's tests for scalability, volume, and speed; in fact, it outperformed SAP's major competitor by 300%-800%. The product's architecture was validated, opening a floodgate to other large accounts. SAP America then set its sights on global companies with revenues of at least \$2.5 billion. Eric Rubino, general counsel, recalled:

The product was validated as being so superior to competitors' that we thought it really could become the de facto standard—if we could get it out there fast enough. We believed that we had a window of opportunity when no one could compete with us, but a window of only about two years.

Regional Organization To move product as quickly as possible, SAP America established in January 1993 autonomous regional offices in San Francisco, Chicago, Atlanta, and Philadelphia. SAP headquarters remained in Philadelphia, but the corporate office, which continued to handle events, public relations, and advertising, was separated organizationally from the Northeast Region. Each region became a separate P&L with its own presales, sales, consulting, and training services, all reporting to a regional vice president (RVP). Wahl explained:

Initially, we thought about common resources for the regions. Then we decided that for each region to win strategic deals, we needed to give them all of the autonomy and tools they needed to close the sale, as well as the services required to support the client.

The regions had significant flexibility in dealmaking. If they were negotiating licenses, for example, and the customer thought the fee was too high, they could offer free training, or even free consulting to close the sale.

In 1995, each of the four regions was further divided into three districts, led by a district director. Like regional vice-presidents, district directors were general managers who ran relatively complete businesses. Key aspects of the role was described by Robert (Bob) Salvucci, district manager for Philadelphia, and later, Coote's successor as RVP for the Northeast: "It's a fun job if don't like a lot of structure and you like to handle a lot of things happening at once. You need high energy, a thick skin, and the ability to make rapid-fire decisions on the fly." Districts did not have a separate P&L, however; for accounting and compensation purposes, they were considered part of the region. The compensation system was highly leveraged; that is, for regional, district, and other managers, it had a low base salary relative to market, but there was no cap on the upside potential. The variable portion of the compensation system was tied primarily to making individual, district, or regional software sales numbers. Because SAP stock was traded only in Europe, there were no stock options.

Resourcing Explosive Growth

The first Americas strategy meeting was held in Bermuda in the summer of 1993, and became something of a landmark event. Market acceptance of R/3 was now assured, and enthusiasm for the product was so great that explosive growth was anticipated. The group set a one-billion dollar revenue target for SAP America, to be reached by 1997. To achieve such massive growth, the executives concluded that they had to do three things: create an industry strategy to penetrate markets and build the installed base, rethink and vastly expand their partnership strategy, and dramatically ramp up their service and support capabilities.

An Industry Strategy: ICOEs

The executives developed a vertical industry strategy, to be delivered through industry centers of expertise, or ICOEs. ICOEs were to serve as a bridge between R/3 customers and the product development organization in Walldorf. Each would work closely with users in a particular industry, defining and prioritizing their requirements, and then communicating them to developers to influence their design decisions and deployment of resources. This approach fit well with SAP's product philosophy. The base R/3 product was not expected to provide a 100% solution; it would meet only 80% of customers' needs, and ICOEs would provide the final 20% through customized software solutions and industry specific consulting services.

At their meeting in Bermuda, the executives chose to establish ICOEs in six manufacturing sectors, including oil and gas, process industries, and high technology. By 1995, these markets accounted for 80% of SAP America's licensing revenues. Organizationally, the ICOEs were small, highly autonomous units, consisting of two to six presales and consulting experts, that nominally reported to a regional vice president. But they were in fact highly independent, and were led by directors who were extremely entrepreneurial and had been recruited because of their industry-specific knowledge.

Each of the six ICOE directors interpreted his role uniquely, giving different weight to one of three areas of activity: presales support, charting market direction, and liaison with product development. The High Tech ICOE, for example, concentrated on supporting customers and the SAP field sales force during the presales process, while the Process Industry ICOE built a formal, broad-based process to help customers define their requirements more clearly. These requirements were then prioritized for different user groups. User groups were highly organized within the SAP community; they had considerable power, and served as a critical source of information and feedback.

Most ICOE directors spent considerable time in Germany building strong ties with influential developers and SAP AG board members. As one of them put it: "SAP works like the Senate. Lobbying and influence are essential for getting your industry's needs met in the next release of the product." Prior to the 1996 reorganization, the six ICOE directors had never met as a group; typically, they operated independently of one another and had little contact.

Partnering

To realize the company's ambitious growth goals, the range of partners and their level of investment in SAP would have to shift to unprecedented levels. Ott was given the task of leveraging external resources in the sales and implementation of SAP, while also managing the business side of partner relationships. He worked to develop partnering relationships in four categories: alliance, platform, technology, and complementary partners (see Exhibit 3). Allen Brault, director of the U. S. Partner Program, described the resulting network as an "ecosystem":

Everyone is intertwined, with each firm tied into everyone else's success. If any component fails, it ripples throughout the entire system. Ultimately, the failure can be traced back to SAP, because it means we have not worked closely enough with that partner.

Gaining Cooperation SAP America chose to leverage alliance partner resources and expertise by leaving 80%-90% of the consulting implementation business on the table. It would focus on selling the product and assisting with the initial installation; all other aspects of implementation or application were the province of partners. To pursue this business, partners had to make substantial investments in their own SAP practices (**Exhibit 4**). After three years, the results were obvious; as Ott put it: "R/3 has been a gold mine for leading consulting firms." Brault explained why SAP had been so successful in getting these firms to invest in their SAP practices:

Our approach is a complementary one, in that we have opened up a vast new business for our partners. We say, "We have a great product, and if you are willing to make the investment, we are not going to compete with you for the same consulting business." Traditionally, these firms have been reluctant to fund a practice around an outside vendor's product, because the vendors have often moved into consulting, making it difficult for them to compete effectively.

These relationships were further strengthened by changing business needs. In the early 1990s, the concepts and language of reengineering and business process redesign (BPR) became increasingly popular. Ott noted: "Consultants were talking about reengineering and BPR, but they did not yet have a tool to make their concepts fly." R/3 was just such a tool, for it could immediately embed redesigned processes in an integrated information system. R/3 could even lead the redesign process, as Coote observed:

R/3 is packaged software, but it is so broad that it forces different parts of an organization to work together. Just to install the software and set the tables, every part of the company has to agree on some basic points: What is a customer? When do we do credit checks? What are the capacity limits of each of our factories?

In addition, R/3 included at least 800 best practices, which made it possible to shorten the BPR process and lower the risks associated with installing custom software and integration. Instead of coming up with new process designs only to find that they could not be programmed into computer systems, designers could use R/3's process templates, which were preconfigured, and then modify them using automated modeling tools. Ott explained:

The market will no longer pay for paper designs that can't be programmed. Our system is both very flexible and standardized: you can configure it according to customer needs, without modifying the underlying software or interfaces. For this reason, the big consulting firms have adopted R/3 into their BPR methodologies, and the process reengineers now design their "to be" scenarios with R/3 in mind.

Competency Centers The openness of R/3 and its reliance on client-server architecture meant that customers had to make platform and technology decisions that they had not faced with R/2. SAP had to help them assess their options, while remaining neutral about their choices. This required an intimate familiarity with the ever-changing capabilities and constraints of platform and technology partners, and an understanding of their ability to support R/3, which was itself constantly evolving. To address these needs, SAP America established Competency Centers with each of its platform and technology partners.

The Centers provided a range of pre-sales information to customers, and were a focal point for the flow of knowledge between SAP and its partners. They were usually located at SAP headquarters in Philadelphia, and occasionally on partners' premises. In each Center, the partner

provided a dedicated team of technical and applications consultants who were highly knowledgeable about their own product as well as R/3. The team worked with customers on such matters as the sizing and configuration of the computer system they would need, and the required connectivity to other corporate systems. The Competency Centers had the systems in place to perform tests and benchmarking for R/3; these tests served as the basis for SAP's certification of hardware and technology partners. Certification was conducted by a group of 50 technologists based in Walldorf, under the direction of Wahl.

Managing the Relationship Complementarity between R/3 and partners' business focus was but one part of SAP's approach to alliance relationships. Ott described its key characteristics: there could be no financial ties between SAP America and its partners; the relationship had to be mutually beneficial; and it could not be exclusive. The company had also established "rules of engagement" for partnering activities. Three of the most important were equal treatment at the same level, making the highest level partnering status (called "logo partner") an earned one, and the establishment of clear criteria for promoting alliance partners to that status.

Every year, SAP America assembled its global alliance partners and shared with them its business plan and anticipated consulting needs. Forecasts were extremely accurate because SAP dominated the market, knew its pipeline, and was relatively certain of the deals that would close. It was then up to each of the partners to decide how much more they wanted to invest in training and how much additional resources, including the number of additional R/3 consultants, they would hire that year. Ott explained his approach:

The cornerstone of the relationship is open, trustworthy conversations. I put our numbers on the table, and I never overstate our expectations. We have always hit our numbers; in fact, we've always exceeded them. In addition, I will not sign up new alliance partners to meet rising demand if the old ones can do it; I always give them rights of first refusal.

Of course, our logo partners cannot plan together because that would be collusion. But by the size and nature of the large consulting firms, you have a pretty good idea of what they are likely to be willing to invest. I don't want to legally nail down these resources, however, because the relationship should be based on trust.

Ott's organization included a single global partner manager for each of the global alliance partners, as well as partner managers who were responsible for two or more smaller alliance relationships. The rules of engagement minimized conflict of interest by having each partner manager responsible for a single partner in a category. To ensure the best solution for customers, Ott insisted that his managers not be measured on the SAP-related revenue generated by partners. They were, however, responsible for managing all bilateral relationship issues of strategy, communication, education, and advocacy.

Under their direction, a master legal agreement was signed with each partner. It outlined SAP's obligation to train its partners, give them a copy of R/3 software, and assign partner managers. Partners were obligated to make "reasonable commercial efforts" to acquire and maintain a comprehensive knowledge of SAP and its products; live up to certain standards, such as keeping customer satisfaction above a threshold level; and dedicate a partner manager of their own to SAP. Alliance partners had to have a software implementation methodology that was appropriate for R/3. They were also required to attach a business plan to the legal agreement, outlining their expected commitments of resources for SAP consulting, broken down by markets and geography.

Partnership agreements could be terminated on a number of accounts; the most important was customer dissatisfaction. Based on an annual customer survey undertaken by an independent source, partners were rated on a 1-10 scale. Those whose weighted average scores exceeded a certain level achieved an award of excellence for the year; those that fell consistently below were warned of

the need to improve. SAP ratcheted up the standard annually, and was willing to use it to remove poor performers. In past years, two partners had been removed for this reason.

Professional Services

Professional services were those activities provided to customers for a fee; support activities, by contrast, had no fee attached. Consulting was the core of professional services, while training spanned both categories. It provided a source of revenue, but had historically been run on a break-even basis.

Consulting While a few SAP consultants worked directly for a particular ICOE, most reported to the region that hired them. Their solid reporting line was either to the district director or to the services director in the region. Because of the company's explosive growth, the hiring rate for consultants had been exceedingly steep (see Exhibit 5). Considerable learning took place on the job, since only 10 weeks of training was provided. Although exact numbers were hard to come by, SAP believed that for every one of its own consultants, there were 8-10 in the outside SAP community. Basho, who had been district director in the New York metropolitan area before Besier named her vice president of consulting (with dotted line control), in January 1996, compared SAP's and partners' consultants:

There is nothing that we do that our partners don't. But you could best describe our consultants as deep and theirs as broad. Our consultants bring in-depth product knowledge, and are always a little further ahead than partners on the product's capabilities and requirements.

SAP's consultants did two main kinds of work: basis consulting and applications consulting. Basis consultants put R/3 and its support system in place and ensured that the software was functioning correctly in a network. They knew what hardware configurations were needed to support the volume of transactions, how to convert the data from legacy systems to R/3's client-server approach, and how to load the software. Basis consultants were extremely valuable, and their skills had to be well leveraged. For every basis consultant, there were at least three applications consultants. Their primary responsibility was to work with the customer to identify their requirements, and then customize the software configuration to match those requirements.

Because growth was so rapid, SAP America needed experienced managers immediately; it therefore hired its consulting managers from outside. As William (Bill) Schwartz observed when he was hired as director of human resources in February 1996: "The expectation was that you were being brought in because you already knew the right thing to do, and you were expected just to do it." There was no career path for managers or consultants, and each region evolved its own definitions of managerial roles. Because of the long learning curve, it took nearly two years for SAP to begin getting a payback from its consultants. Unfortunately, with demand so high for anyone who knew anything about R/3, consultants began leaving in significant numbers by 1995. Some left to join a customer or a partner organization; more frequently, they left to set up their own R/3 consulting practices.

Training During 1992-93, SAP developed scores of modules on product functionality. The Northeast region sequenced a number of these modules into a basic 10-week package that was used to train SAP's own consultants; the approach was quickly adopted by other regions. A five-week version of the course was then developed for partners, and customized versions were presented to customers' project implementation teams. SAP declined to pursue the end-user training business for profit, even though by 1996 it was estimated to be a \$600 million market

To create a large-scale operation that could provide the quantity of external resources of the desired quality level, SAP America founded a Partner Academy in June 1994. Multiple locations were soon established in various parts of the country. The Academy's business side was under Ott's

purview, and he ran it on a breakeven basis. Ott explained: "If our partners are going to invest so heavily in staffing up for R/3, I do not want to charge them on top of that." The cost of attending the Academy was set at \$1000 per seat, but the fee was not always collected. By mid-1996, 5,000 outside consultants had gone through at least one cycle of training at one of the Academy locations. Those who passed were certified as skilled for that release of the software.

Support and Infrastructure

One manager likened the 1993-95 period to "riding a rocket." During this period, very little attention was given to building infrastructure, except in the area of licensing and contracts.

Licensing and Contracts When Eric Rubino was hired as general counsel in 1991, he found no systems or procedures in place to support the sales process. He recalled: "I would get a license in and wouldn't even know where it came from." To create order, Rubino generated standardized license agreements and a clear cut proposal process; he also copyrighted the product. He observed: "Contract management is a tangible thing. For example, you must have a consistent message across regions. You must have consistent discounting policies, and be consistent in your concessions to customers." Rubino developed tools for training new contract administrators, noting that, "If you are going to decentralize, you must put tools in place to empower contract administrators—who are not lawyers—to make business and legal decisions for the corporation, and train them to understand corporate positions."

Tools included standard pricing manuals that spelled out discounts and concessions, and a contract manual that spelled out, paragraph by paragraph, what the license agreement meant in lay terms. The manual described very clearly what terms could be modified, the exact terms that could be used or added, and what language and wording could not be deleted. Before new administrators were sent out to the regions, they worked side by side with senior administrators for a month. Rubino also held a great many joint staff meetings on a regional basis, ensuring that regional contract administrators were aligned and consistent in their policies.

Administration Between 1993 and 1995, there was little formal planning or budgeting. One result was great latitude in the interpretations of the few administrative systems that did exist. Meetings were rare, and offices were frequently empty because staff were in the field meeting with customers. In response, the regions got rid of the computers sitting on unused desks and gave every employee a laptop. Salvucci described the field environment:

You were closing every deal you could, hiring people, opening offices, and building support. There were never enough resources to go around, so you were constantly finding and juggling resources, and being careful about the promises you made. Until Bill Schwartz came on board, all HR was outsourced, so there was no infrastructure you could turn to for new employees—or for new customers or resolving a problem. You were personally responsible for things like finding office space for new hires, getting them laptops, plugging into systems, and ensuring new people were trained.

Human Resources Prior to Schwartz' arrival, SAP America's major HR concern was recruitment. The company knew what it had to offer people to bring them in, but had little idea how its compensation system compared to others, let alone the percentile in which its base salaries should be. Salary grades and job titles existed on paper, but adherence to guidelines varied across regions. Schwartz found that even many senior managers did not take a traditional business perspective, nor give much thought to how their activities might impact people outside their regions. He observed:

A director will want to promote some consultants, and will justify it in terms of employee retention. They don't think about a cost justification, or revenues versus

costs. I will push back: "You are adding costs, but are you making money? Is there a strategy about whom you want to retain and whom you don't? Have you talked to other business directors about this? Have you considered the impact of your requests on my office? For instance, if I approve your requests, what precedent will it set for other regions?"

Building Infrastructure By the spring of 1996, SAP America began paying far more attention to issues of organization, systems, and infrastructure. Schwartz had a one-word explanation for the change: "Kevin." Kevin McKay had joined the company in mid-1995 as CFO for the Americas, with a charter to build the internal side of the company and the goal of playing a major role in shaping strategic direction. Software, McKay emphasized, was a reference business, in which the need to build infrastructure was linked to the phase of the business. "Early on," he observed, "we needed some good footholds, some key customer references. Our first big push was to establish our name and to position ourselves. That's the hull of the ship parting the waves." But he pointed out:

Once you take ownership of a product, you must have a huge infrastructure to support it effectively. Behind the hull there has to be fuel and propulsion that is headed in the right direction. So we needed a hotline that follows the sun on a 7/24 [7 days a week, 24 hours a day] basis, consulting resources to size and implement the product, a whole group of partners to help position R/3 within the customer organization, and relationships with hardware partners to establish performance criteria on their platforms. We had to develop a curriculum to train people, and build our own consulting organization to make sure the implementation was done right.

That was stage one. Now we are entering a different stage of maturity, where we have a huge responsibility to our installed base. Worldwide, we have 5,000 customers who are investing millions yearly in our product for their mission-critical activities. At this point we have to build the additional infrastructure to support our customer base.

To that end, McKay's first-year agenda in human resources included several initiatives: the creation of accurate, properly titled job descriptions, a market survey of salaries and benefits to serve as the basis for a total compensation strategy, and the development of a communications plan covering benefits and pay. Schwartz described the communications plan as "our effort to tell employees what they risk losing if they leave. We have very good benefits and profit sharing, but we just gave them to people. They weren't communicated, so they just became taken-for-granted entitlements. We need to tell people much more effectively what they've got here." Schwartz had also begun working on a long-term incentive plan, which included three-year vesting and a performance-unit plan pegged to SAP America's performance as a whole, and was actively recruiting someone to help direct career pathing, succession planning, and management development.

Sales and Implementation Process

Presales and Sales The decision to purchase R/3 was often part of a strategic choice to run one's entire company differently. As a result, the sales cycle was a long one, especially for global clients. It often took a year or more to build relationships to the point where an opportunity arose that could be used to gain access for the 12-18 month presales and sales process. Account executives had to be able to identify and position these opportunities, while building consensus across divisions, countries, and multiple levels of the organization. In many cases, customers had never before made an enterprise-wide decision. Paul Melchiorre, a global account executive, described the process:

You hang out at the company for long stretches of time. You live there, building relationships, understanding the organization's complexity, its politics, its readiness for change, and putting a strategy together for your unique selling

proposition. Sometimes you do a small project; if it goes well, you develop allies, gain some exposure, and can then begin selling the vision of what SAP can do across the board. You may meet 200-300 people during the selling process, all of whom are potential influencers. It may take a year or more to get the credibility to sell your vision at the top executive level. And when you get to that level, you may only get the opportunity to present for an hour, once.

Because the potential savings and strategic benefit from implementing R/3 were so large, a formal justification process was seldom required. Instead, global companies requested demonstrations, tests, and benchmarking to prove that SAP would work in their environment. This often required the involvement of SAP's partners. Salvucci described the role of the district director in the process:

You need to be present at the beginning of the sales cycle to position the product and develop executive contacts that you will need later. You also have to find resources for a presales team, a sales team, and a consulting team to manage the sales cycle for the software. Because there is a sales cycle for the consulting partner, hardware, and database, you must spend a lot of time with them as well, putting together strategies.

Implementation Although no two installations were alike, outside partners like Andersen and Price Waterhouse usually took the lead role in R/3 project management and implementation. Because they integrated SAP product knowledge with their own implementation methodologies, each handled the process a little differently. The partner's consultants and customer's team members were dedicated full-time to the project, working together day in and day out.

SAP's basis and applications consultants, by contrast, usually served on multiple projects at the same time. They therefore attended meetings intermittently, assisting in the implementation process and providing expert advice and coaching about the product to both customers and partners. Each region's consultants used their own implementation methodology. Some customers did not want to rely on outside partners, or required special skills; these installations SAP handled itself.

Organizational Challenges In a Shifting Market

Despite its success, SAP America was facing a number of challenges and problems. By 1995, there were internal and external pressures, resulting from the company's explosive growth, stronger competition, and new strategic demands.

Internal Issues

The regions had different approaches to billing, overtime, and training, and were not operating as a single company. Utilization of consultants, for example, could be 80-90% in one region, and half of that in another. There were similar discrepancies in utilization rates in training centers. Nor was learning being transferred throughout the organization. Coote summarized the consequences:

We have not been leveraging our size, and have not been able to match our talent with the problem at hand. People are working separately on the same problem, so instead of fixing something once, we fix it four times.

Moreover, market perception was that SAP implementation was costly and lengthy. This perception was fueled by a number of damaging articles in the press that cited six-month projects

taking four times longer than predicted, with an attendant rise in costs. The reality was more complex. As a backbone for all business processes, R/3 made possible projects of a scale that had not previously existed. When implementation was linked to the massive redesign of business processes, project scope escalated dramatically. As a result, it was difficult to disentangle the costs and time for implementing R/3 from the costs of effecting the major cultural and organizational changes associated with reengineering.

Strategic Shifts and Opportunities

By 1995, competitors' products had developed sufficient functionality to be considered viable alternatives to R/3. SAP's largest competitor, Oracle, had an excellent database to which it had added an EIS application. As one manager observed: "What they want to sell is their database, so they use their application as a loss leader to gain control of the account. They are getting very aggressive and will do whatever it takes." Other firms had taken a modular approach, developing, for example, a strong HR module to gain entry, which could then be leveraged to sell other products over time. Baan had emulated SAP in some respects, but in order to land the Boeing account, was reputed to have revised its base product considerably—a path SAP had refused to take to win any order.

By 1996, SAP America had approximately 500 customers and 700 installations in North America; about half were *Fortune 500* companies. As McKay pointed out, one challenge was to harvest these accounts more completely: "We've sold modules and software to the top tier, but we haven't fully mined these accounts. We have the hunters out bagging the big global accounts, but now we have to bring in the farmer who works them over time." Coote identified another challenge: "We must dramatically increase the customer base so that we become the de facto standard." This meant continuing to close global deals, increasing sales in services markets, and moving into the mid-tier market where customers thought about R/3 in a very different ways. Bryan Plug, president of SAP Canada, elaborated:

Because of the complexity of their businesses, and their cultural belief that they are the best, big companies feel that they must invent their own business practices. So they want an implementation method that explores all the nuances and niches of R/3, and allows them to extract all the flexibility and functionality they can. They assemble the best software, the best process experts, and the best implementers, and are willing to make the necessary investments to stay on the leading edge.

Mid-tier companies, on the other hand, are more pragmatic. They don't presume they can do it best. They are willing to find out what others have done, and see how closely it fits their situation. They are willing to adapt, and are looking for a guided tour through the software. All they want is a solution that will work for them.

The increased importance of the middle market had implications for the sales and implementation process as well. Salvucci explained:

You have to be able to pick up a phone, get to the top people, and get in the door. You are trying to close the order from the moment you arrive. You have to minimize the sales cycle, get a decision, and, if it isn't happening, move on.

Reorganization

On February 1, 1996, Besier resigned from SAP America to head an Internet startup. In the wake of his departure, a three-person Office of the President was formed. Wahl was named CEO, but

still spent about half of his time in Germany. Coote, who had joined SAP in 1988, became CFO of SAP America in 1990, and was at the time RVP of the largest region, the Northeast, was named president, and took responsibility for the line organization. McKay continued as CFO and was named, in addition, chief operating officer for the Americas, adding training, internal systems, hotline, and other support to his responsibilities. Both McKay and Coote reported to Wahl.

A New Structure

On Saturday, April 13, 1996, Coote called a meeting of senior managers to discuss the best way to realign the company for the next wave of growth. His two primary objectives were for SAP America to act more as one company, and to better leverage its size and skills. Coote's original proposal for the new organization was vertical industry segments, an idea that had been strongly favored by Besier. Some expectancy had built around this outcome, with the ICOE directors anticipating that they would become vice presidents. In presenting the proposal, Coote separated out the existing manufacturing ICOEs and also, for the first time, financial services, health care, and government. He explained: "I wanted to give everyone the same view of where we make money today and in the future. Today 75%-80% of our revenues come from manufacturing companies. But our future growth is in services."

Lines of Business After a modest amount of discussion, the group concluded that although SAP America should continue to work toward a vertical organization, it was not yet ready to make the leap. It simply did not have the people to fill many of the vertical roles, and managers were not clear about the criteria to be used to form segments. For example, how many and which industry slices should they have? On what basis would such segments be formed? To which markets did they really want to dedicate resources? There was concern as well that SAP might again splinter into a dozen or so pieces, driving up overhead. The group therefore agreed rather quickly that for the next 18-20 months, they would organize around three major lines of business: sales, consulting, and training. In the weeks following the meeting, a more detailed organizational plan was developed, coupled with a new compensation plan. For directors and above, a portion of variable pay was now based on the performance of their line of business, and a portion was based on SAP America's performance overall.

Sales Sales was further sub-divided into its own three lines of business by size of account; a fourth line, emerging markets, which involved the three new services markets, was added as well (see Exhibit 6). Peter Dunning, formerly RVP for the Southern region and newly named executive vice-president, described the increased focus the reorganization gave him and his account executives in Global Sales:

As RVP, I had 250 people; 80% of them were in consulting and support. The job was very maintenance intensive. Now I can focus on getting licensing revenues from large accounts. We've gotten rid of the distractions—like geographic barriers and different sized accounts—for people who are good at global deals.

In anticipation of the next reorganization, Dunning set as one of his priorities the building of a virtual organization within Global Sales organized around industry expertise. More and more of his sales people would become specialists in particular industries.

ICOEs The thorniest issue in the reorganization was what to do with the ICOEs. Coote outlined the situation:

The ICOE directors were doing an excellent job, but they had each gone in separate directions. I wanted them to be more like program directors in a defense company or brand managers in a consumer products company who work across organizational boundaries. In reality, they were creating separate organizations

within the company, and were beholden to no one. As a result, they were getting detached from the line. What we needed was to internalize their message into the mainstream of the organization.

After a great deal of discussion, the six manufacturing ICOEs became part of Jane Biddle's industry marketing group, reporting directly to Coote. Coote and Wahl had hired Biddle a few weeks earlier, anticipating that she would play a leadership role with the ICOEs. Biddle had 25 years experience in software development, systems implementation, and marketing, knew all the ICOE directors, and had been to Waldorf many times because SAP had for years been the largest client of her strategic marketing firm.

Biddle had two broad objectives: bringing consistency and standardization to ICOE practices, including a single face to customers and the field; and developing an integrated approach to marketing within the company by spreading ICOE knowledge throughout SAP. One of her vehicles was a formalized business planning process, which required the ICOE directors to develop plans and present slides in a common format. Her next step in planning was to help them turn their strategic plans into operational plans and budgets. To bring the ICOE's industry knowledge into the line organization, Biddle's first step was to develop "solutions guides." Each was a primer on an industry, and crafted the information to what a salesperson would want when talking with a potential customer. These guides were to be the basis for focused sales training, the first of its kind at SAP.

The Challenges in Professional Services

The reorganization gave Basho the 850-member consulting organization on a solid-line basis, rather than the dotted-line reporting she had had since January. She set as her top objective "to change both the myth and reality that SAP implementation is costly and complex." Coote had charged her as well with the goal of developing an implementation strategy for moving downmarket to mid-tier companies.

Professionalization

Even before the reorganization, Basho had taken steps to begin professionalizing the consulting organization. One of her first initiatives was to personally review each region. She first assembled a seven-page outline of the issues she intended to cover during her visit, and sent it out several weeks in advance. She recalled: "The regions were shocked. First, because they got to see something in writing, and second, because I sent them the request ahead of time." Another first was the attention Basho devoted to productivity and consistency across regions. She requested information on consultants' billable hours and then established targets for the end of 1996. In addition, she assigned a cross-regional group to develop a single implementation methodology for mid-tier companies, and created another group to define an integrated set of consulting roles. Their work provided the input for Basho's recasting of the professional services organization and the development of multiple career paths.

Career Paths and Roles Basho subdivided her consulting force into four groups: technical services, field consultants, principal consultants, and global support managers. Her technical services people were grouped by functional expertise; they included SAP's 200 basis consultants and experts who worked with emerging technologies. The field consulting group mirrored the national accounts salesforce, and had a four-step career path: applications consultant, lead consultant, consultant manager, and services director. Basho aligned each of her field directors with an ICOE director, and made them accountable for bringing ICOE knowledge into the professional services organization. A new role, called principal consultant, was created for experienced consultants who aspired to excellence in consulting rather than positions in management. The role had considerable cachet; the

first cadre of principal consultants immediately renamed themselves "platinum consultants" and created their own logo. Basho explained the importance of this option: "These were the people who were leaving SAP to establish independent practices. Within a couple of weeks of announcing the concept, a number of them had already contacted us and told us they want to come back."

Basho also split out the role of global support manager (GSM) and positioned GSMs at the front end of the sales process in a role equivalent to partner in a Big Six firm. There were 30 to 40 GSMs in total. Each was dedicated to a single account, mirroring the approach in sales. GSMs developed the overall implementation program for a new R/3 installation and coordinated SAP resources throughout the process.

Expectations and Behavior Basho and Schwartz worked together to clarify roles, procedures, and lines of authority in the new organization. In May, Basho convened a two-day meeting with her directors and managers, where she and Schwartz shared the stage. He recalled:

We were all in the room together, and Eileen said: "When you want to promote someone, I want to see it first, and I want a justification. Bill is the last stop in the process, so don't go around me. He will support me and simply send it back." And I stood there nodding my head, "Yes."

Schwartz then explained how the consulting organization would work with his field HR people; this time, Basho nodded in affirmation. Following the meeting, several people observed that they had learned more about what was expected of them in the preceding two days than they had in the previous two years.

Customer Alternatives and Involvement

The key objectives of moving into the middle market (called "national accounts" at SAP America) and controlling implementation time and costs were both addressed by a new approach. Basho explained:

In national accounts, we are going to go in and help customers size the project during the pre-sales period. Using an estimating tool, we can draw a baseline for time, costs, and resources. Then we are going to explore alternative project approaches, and increase the choices a customer has on implementation. If they choose to work with one of our global alliance partners, we will position the partner. If they choose Accelerated SAP [SAP's new rapid implementation methodology for national accounts], we can recommend a group of smaller partners who are certified implementers. Initially, I will have to subcontract these small partners in under me. Even though they have good people, they don't yet have a reputation for successful implementation.

Coote felt so strongly about getting a rapid implementation methodology in place that he had accelerated its timetable. Reorganizing by lines of business had made it easier, he thought, to adopt a strategy for the middle market that differed from past approaches. Salvucci, who now had national account sales responsibility, concurred:

One of our strategies for selling in the middle market will be to engage our consulting organization early in the sales cycle, and put a stake in the ground for customers: if you want to use our methodology to install SAP, this is what you can expect in time and money. If our partners won't step up and meet these targets, we will do it ourselves. That does not mean we are going to go out and do all the consulting. We are not. What we are doing is putting a stake in the ground to increase our control over the process.

In the global market, Basho also intended to bring down implementation time and costs. She explained:

I am also increasing our involvement with global accounts. From the beginning, global support managers are now strategically placed to deal directly with the customer's executive sponsor, and to educate the customer about how to use our partners more effectively. The GSM sets the implementation strategy, gets the right people onto the projects, and keeps the program from going off track.

Basho was keenly aware that this new approach would impact partner relationships, although she did not envision major changes in strategy. She observed: "Our partner strategy was and is sound. The problem is that we gave up too much control." Coote agreed, noting that SAP America's approach to global accounts was one of continuing evolution. He observed:

We have to be more involved than in the past, and that means we have to refine the partnering model. In addition, our product has continued to evolve, and we have more tools available for automating some of the configuration work. Partners have to understand their changing role in the mix, and that the relationship will continue to change.

Exhibit 1 Annual Revenues (in millions)*

	91	92	93	94	95	As of 9/30/96 (9 months)
SAP-Global (DM)	707	831	1102	1831	2696	2372
Americas** (DM)	81	98	232	636	1010	921
Americas (\$)	49	63	146	394	711	614
Exchange rate as of December 31	1.664	1.562	1.654	1.616	1.421	1.5
Americas % of Total Market	12%	12%	21%	35%	37%	39%

*In both Germany and America, the composition of revenues was roughly the same, and had been quite stable:

70% licensing of software and maintenance
20% implementation services by SAP's consultants
10% training of partners and project teams

**Americas includes: Canada, U.S., Mexico, Latin America, and Australia. U.S. operations account for 80-90% of Americas operations.

Source: SAP America

Exhibit 2 R/3

R/3 was a standard software package that helped companies reorganize around processes rather than functions. It employed a three-tier architecture whose robustness, scalability, and flexibility allowed it to meet the diverse demands of global and smaller customers, as well as the needs of a broad range of industries. R/3's master file and client-server design made possible seamless and synchronous integration of data sharing across an enterprise, even through new releases of the product. This capability led SAP America's president Jeremy Coote to observe: "What you are buying from SAP is the breadth and scope of seamless integration, rather than a product."

By 1996, the cumulative investment in R/3 exceeded DM 3 billion, and had been fully expensed. The scope of R/3's reach was massive; it cut across the entire enterprise, linking over 80% of all activities. The global nature of the product was reflected in its ability to automatically calculate exchange rates, and to operate in multiple languages. Revenues from R/3 came from licensing users at a particular site, and from annual maintenance fees which were a percentage of the original fee. Licensing fees depended on the number of users and their category of use; some users only read transactions, some carried out a limited set of transactions, while others used the full capacity of the system. Fees were higher for the more intensive categories of use.

R/3 was very open architecturally. This meant that a customer was not locked into an existing database, type of hardware, or any specific portion of their solution forever. R/3 could run on any of the major hardware platforms, operating systems or relational databases. The product consisted of a large suite of applications modules in four broad areas—finance and control, materials management and production planning, sales and distribution, human resources—and the software took a process perspective on all of these activities. For example, on a quote-to-cash process, it delivered a quote on a product to a customer, priced it out, checked availability, procured materials, stages them, shipped the product, and collected the money.

The horizontal, process orientation of R/3 was designed into the software through configuration tables. A table was an arrangement of default settings through which data ran automatically. A major process could involve a few hundred tables, and changing one table had ripple effects on scores of others. Although R/3 was designed as a standard package, the software could be customized by changing the settings in the tables. Based on its preferences and operating requirements, a company decided on the settings for each table. In this way, it tailored the software to its needs, but without changing any code.

Recently, the laborious process of changing every table by hand had been superseded by two major developments: SAP had encoded over 1,000 best practices into the software; and SAP had developed new modeling tools that automated the table-setting process. Best practices were scaleable business processes that had been drawn from 25 years of close collaboration between customers and developers. They were actually precise configurations of table settings that encoded the practices of industry leaders, served as templates that other companies could use as a starting point for their own organizations.

New modeling tools such as Business Engineer also made it much easier to align standard templates with a customer's own processes. Business Engineer allowed customers to automatically reconfigure scores of tables to accommodate their changes to SAP processes. The tool allowed the application consultant to lift the template into the modeling tool, make it look like the customer's, and drive those parameters back into R/3. SAP had also developed a rapid implementation methodology called Accelerated SAP that drew from the best practices of field consultants, who collaborated to design the new methodology. It was specially tailored for mid-sized companies, who were unwilling to invest in extended implementation.

Exhibit 3 Types of Partners

Type	Characteristics	SAP Certifies That:	Value to SAP	Value to Partner	Examples
ALLIANCE	Professional service firms that provide services and resources in sales and implementation of SAP products.	Individuals in the firm have sufficient R/3-knowledge	Leverage client relationships Leverage industry expertise Allow SAP to sell high volume of R/3 fast Allow R/3 to become de facto industry standard	Huge, lucrative SAP practice area	Price Waterhouse Andersen Consulting ICS/Deloitte CSC Index DDS, Inc.
PLATFORM	Provide hardware on which R/3 runs	R/3 runs on the platform	Ensure that SAP's technology is in sync with current and future platform technology Provide multiple platform choices to customer Leverage large marketing budgets of platform companies	Ensure that its current and future technology will support R/3 SAP is a market leader which drives their commodity product, part of channel strategy Exploit SAP in their advertising	IBM* HP* Digital Apple AT&T Sun Microsystems Pyramid Telemarketing
TECHNOLOGY	Provide operating systems and databases through which R/3 runs	R/3 runs on operating system or under database	Provide multiple choices to customer Ensure current and future compatibility	R/3 is core business application which must be able to support	Oracle Microsoft Intel
COMPLEMENTARY	Wide range of applications and software tools that run on top of or with R/3	Interoperability of R/3 and third party software	SAP does not provide 100% of software solution Leverage specialized software expertise of third parties	Use interoperability as marketing tool Use SAP as channel to sell product	

*Some partners, such as IBM or HP, have multiple partnering relationships with SAP—as providers of professional services, platforms, operating systems or middleware, and software product.

Source: SAP America

Exhibit 4 Alliance Partner Investment in SAP Practice: Number of SAP-Certified Consultants, circa Early 1996

	Worldwide	U.S.
Price Waterhouse	1800	1100 (500 to be added in '96)
Andersen Consulting	2700 (100/month to be added in '96)	N/A
ICS/Deloitte & Touche	1400 (600 to be added in '96)	900
CSC	1000	200
SAP America	750	180

NA: not available

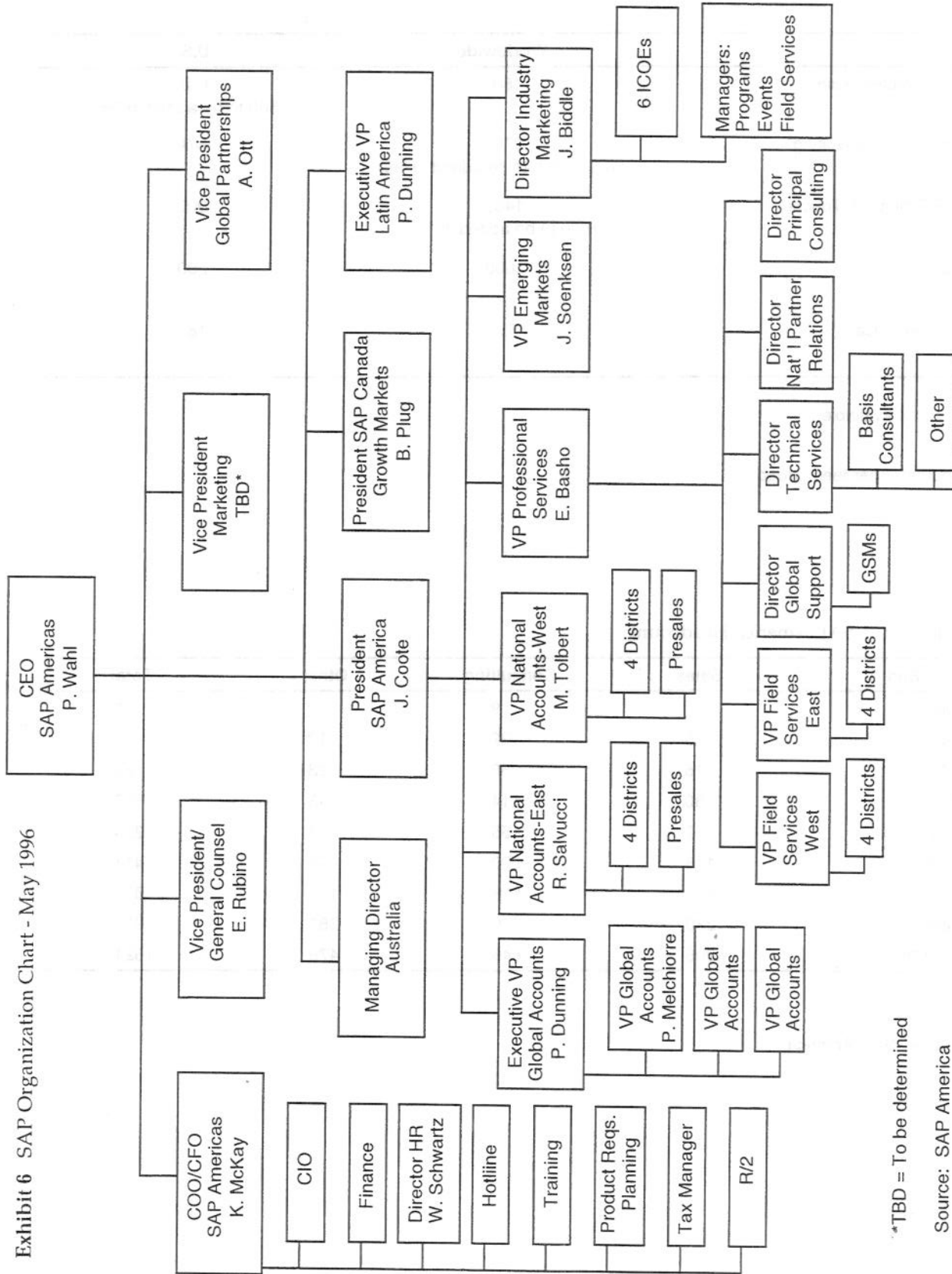
Source: Aberdeen Group

Exhibit 5 SAP America Headcount

Year End	Sales	Consulting	Other	Total
1988	-	9	2	11
1989	5	22	12	39
1990	16	50	23	89
1991	30	114	43	187
1992	50	155	79	284
1993	118	220	73	411
1994	211	523	138	872
1995	230	679	361	1270
10/31/96	296	846	479	1621

Source: SAP America

Exhibit 6 SAP Organization Chart - May 1996



*TBD = To be determined

Source: SAP America

from Richard Vancil: Decentralization: Managerial Ambiguity by Design

Chapter 2

Decentralization: Why, how, and how much

DECENTRALIZATION is the primary organizational philosophy in U.S. manufacturing corporations today. Julius Caesar gave great power to the local commanders of his far-flung legions—geographic decentralization—out of necessity in an age of primitive communications. Du Pont's motives in the early years of this century, and General Electric's at mid-century, were quite different. It is not inaccurate to say that managerial decentralization—the measured, intentional distribution of responsibility for the financial performance of a segment of the enterprise—was invented in the United States.

If decentralization was a managerial invention in 1920, it was an articulated philosophy by 1950, a reorganizational trend by 1960, and a universal practice by 1970. Today, the issue for a manufacturing corporation of any size is not whether it should decentralize, but how much. This chapter addresses that issue; but before we can confront it directly, we must understand why corporate managers decide to decentralize and how that decision is implemented. The questions of "how" and "how much" are tightly interrelated, but the question of "why" is importantly a matter of managerial philosophy. Dealing with that matter first, we will examine the underlying rationale for decentralization, identifying the major economic and social forces that cause companies to decentralize and probing the elements of the managerial philosophy that decentralization entails.

THE PHILOSOPHY OF DECENTRALIZATION

The primary force motivating the adoption of managerial decentralization is economic; more specifically, the economics of the managerial task, and the effect that the quality of managerial decisions has on the economic performance of the firm. The steady, massive growth of the U.S. economy in the last 100 years created great opportunities for business corporations. As such firms grew in size and complexity, it became almost mandatory for their top managers to restructure the division of their work in order to reap the benefits inherent in their current size and to capitalize on future opportunities.

Alfred D. Chandler, Jr., in his definitive work on the evolution of the decentralized form of organization, stated the problem succinctly:

The lack of time, of information, and of psychological commitment to an overall entrepreneurial viewpoint were not necessarily serious handicaps if the company's basic activities remained stable, that is, if its sources of raw materials and supplies, its manufacturing technology, its markets, and the nature of its products and product lines stayed relatively unchanged. But when further expansion into new functions, into new geographical areas, or into new product lines greatly increased all types of administrative decisions, then the executives in the central office became overworked and their administrative performance less efficient. These increasing pressures, in turn, created the need for the building or adoption of the multidivisional structure with its general office and autonomous operating divisions.¹

Chandler's basic thesis is that structure follows strategy, that the organizational structure of a firm is altered so that it will be effective in implementing the strategy that the firm is pursuing. But he also recognizes the interrelationship between strategy and structure:

... Once the new type of structure became known, as it did during the 1930s, its availability undoubtedly encouraged many enterprises to embark on a strategy of diversification, for the ability to maintain administrative control through such an organizational framework greatly reduced the risks of this new type of expansion.²

Thus, we might say that the adoption of the decentralized form of organization has fed on itself. The originators of the concept, Du Pont and General Motors, invented it out of necessity. Their businesses had

¹ Alfred D. Chandler, Jr., *Strategy and Structure: Chapters in the History of the Industrial Enterprise* (Cambridge, Mass.: The M.I.T. Press, 1962), p. 297. Reprinted by the permission of the MIT Press.

² *Ibid.*, p. 394.

great potential for growth, and they wanted to improve corporate performance by improving the quality of managerial decisions. Later, other corporate managers, who had constrained the growth of their business in order to keep it manageable, realized that they could seize on new opportunities for diversification and, by decentralizing, maintain managerial effectiveness.

There is a second important force that motivates managerial decentralization and it is not economic but social; more specifically, the professionalization of management. Here, we mean more than the simple fact that most corporate managers today are paid employees rather than owner-managers. Rather, we refer to the fact that, over the last several decades, hundreds of thousands of young men and women have taken formal training to equip themselves to assume managerial positions. In 1977 alone, over 40,000 masters' degrees in the fields of business and management were conferred by U.S. universities.

There are several aspects of this rather startling fact. First, no corporate manager would deliberately assign substantial responsibility to an incompetent subordinate. The simple availability of a pool of trained potential managers made decentralization more feasible in the 1960s than it was in the 1930s. Second, the last several decades have witnessed a rapid increase in sophistication of the technology of management, due both to the increasing size and complexity of modern business corporations and to the research done by the faculties of the institutions that are granting all those degrees. One result has been a dramatic increase in the amount of managerial work that *ought* to be done if the top managers of large corporations are to fulfill their responsibilities in a professional way. Finally, there are the aspirations of those young potential managers themselves: they are well-trained, there is a lot of work to be done, and they are eager to have a piece of the action. Senior managers, knowing that they must respond to those ambitions if they are to keep their best young people, seek ways to delegate authority and assign responsibility and the answer is called decentralization.

Elements of the philosophy

For whatever combination of these economic and social forces, the *concept* of decentralization has been appealing to the top managers of many corporations. But immediately two questions arise: If we do decentralize, what are we trying to accomplish? And, how must we

change our behavior and the behavior of our subordinates? Answering these questions requires the development of a managerial philosophy which is both understood and shared by managers at several levels in the corporate hierarchy.

Philosophy is not the natural language of hard-nosed business managers. But effective decentralization requires an articulation of the intent behind this method of corporate governance. We are fortunate in having two extensive first-person statements of this philosophy: Alfred P. Sloan, Jr.'s, autobiography, *My Years with General Motors*,³ describing his invention of decentralization in the 1920s, and a series of lectures by Ralph J. Cordiner,⁴ expressing what he was attempting to accomplish as he introduced decentralization into the General Electric Company in the early 1950s.

Sloan and Cordiner faced quite different organizational problems, but both men realized that their already large companies were blessed with a favorable economic environment that would permit rapid and sustained growth. Their task was to organize their firms so that management facilitated such growth rather than constrained it. For Sloan, this meant rationalizing the collection of independent automotive manufacturers that his predecessor, Willie Durant, had brought under the General Motors' corporate umbrella through a series of acquisitions and mergers. Sloan's problem was too much decentralization; he had to figure out how to gain some control over the entrepreneurial barons who were still running "their" companies. Sloan's question of "how much?" was really "how much to centralize?" For Cordiner, the managerial task was to dismantle the monolithic functional organization that General Electric had become in order to create more centers of initiative that would capitalize on the opportunities in a burgeoning market.

In such radically different circumstances, a careful comparative analysis of what these two men say about their experiences sheds considerable light on the philosophy of managing a decentralized firm. As we attempted to synthesize the comments of Cordiner and Sloan, we discerned three broad elements of such a philosophy that they clearly share. These are identified below, and illustrated with liberal quotations from the two men.

³ Garden City, New York: Doubleday, 1964. © 1963 by Alfred P. Sloan, Jr. Reprinted by the permission of the Harold Matson Company, Inc.

⁴ *New Frontiers for Professional Managers* (New York: McGraw-Hill, 1956). © 1956 by McGraw-Hill Book Company. A more detailed description of the reorganization of General Electric is presented by Ronald G. Greenwood in *Managerial Decentralization* (Lexington, Mass.: Lexington Books, 1974).

Stratification of managerial work. The primary benefit from decentralization lies in its potential for improving the quality of managerial decisions. Chandler stated that decentralization was a success in the four companies he studied because:

. . . It clearly removed the executives responsible for the destiny of the entire enterprise from the more routine operational activities and so gave them the time, information, and even psychological commitment for long-term planning and appraisal. Conversely, it placed the responsibility and the necessary authority for the operational administration in the hands of the general managers of the multifunction divisions. (p. 309)

The basic concept is simplicity itself, but putting that concept into action in a large organization is not quite so straightforward. Sloan's recognition that "contradiction is the crux of the matter" was cited earlier in Chapter 1. He wanted to achieve a division of managerial labor, but he also realized that the division of labor could not be precisely defined:

. . . The actual forms of organization that were to evolve in the future under a new administration—what exactly, for example, would remain a divisional responsibility and what would be coordinated, and what would be policy and what would be administration—could not be deduced by a process of logic. . . . (p. 55)

Sloan recognized that the resolution of this problem would evolve over time and that, in fact, the problem can never be resolved once and for all. Instead, a *continuing process* is required to deal with this fundamental problem of decentralized management:

Our management policy decisions are arrived at by discussions in the governing committees and policy groups. These were not the creation of a single inspired moment, but the result of a long process of development in dealing with a fundamental problem of management, that of placing responsibility for policy in the hands of those best able both to make the decisions and to assume the responsibility. To a certain extent this involves a contradiction. On the one hand, those best able to assume responsibility must have broad business perspective oriented toward the interest of the shareholder. On the other hand, those best qualified to make specific decisions must be close to the actual operation of the business. (p. 343)

As president of General Electric in the early 1950s, Ralph Cordiner was faced with a quite different business situation in a different era. He, too, recognized the need for local authority:

In this situation, the manager's work is to lead others by drawing out their ideas, their special knowledge, and their efforts. Since self-discipline rather than boss-discipline is the hallmark of a decentralized organization, the manager resorts to command only in emergencies where he must admit temporary failure to make the situation and the necessary course of action self-evident. To the degree that the contributions of every individual are made voluntarily and are self-disciplined, the manager is leading by persuasion rather than command. (p. 16)

Recognizing that this style of management requires the development of competent subordinate managers, Cordiner also talks about the organizational climate necessary for the development of such executives:

. . . Growth—or lack of growth—of strong leaders and self-reliant individuals depends a great deal on what we call "managerial climate." This "tone" or "atmosphere" in an organization can be subjected to analysis and a certain degree of measurement. Furthermore, the manager and the individuals in the components can do specific things to improve the climate, so that men will develop faster and work will be done more effectively and enthusiastically. (p. 72)

Finally, like Sloan, Cordiner recognized that the most difficult change in behavior is that required of him and his corporate managers:

Decentralization requires confidence that associates in decentralized positions will have the capacity to make sound decisions in the majority of cases, and such confidence starts at the executive level. Unless the president and all the other officers have a deep personal conviction and an active desire to decentralize full decision-making responsibility and authority, actual decentralization will never take place. The officers must set an example in the art of full delegation. (pp. 50–51)

Leading subordinates by persuasion or requiring subordinates to sell their ideas at a higher level are two sides of the same coin. One who must "sell" a proposal clearly lacks the unilateral authority to adopt it. But if one succeeds in selling it, who is responsible for the results? The seller is, of course, and that is the basic mechanism by which a manager is led to accept responsibility that exceeds direct authority. Cordiner may use the phrase "full decision-making responsibility and authority," but, as we shall see later, the two are rarely equivalent.

Institutionalized management. The third element in the philosophy of decentralization that we discerned from our study of Sloan

and Cordiner is clearly intertwined with the first two. This element might be termed the "depersonalization of management," but we prefer the more positive idea of attempting to institutionalize a form of professional management that is capable of reproducing itself.

Sloan presents the General Motors philosophy by contrasting two types of executives:

. . . Mr. Durant had been able to operate the corporation in his own way, as the saying goes, "by the seat of his pants." The new administration was made up of men with very different ideas about business administration. They desired a highly rational and objective mode of operation. (p. 52)

. . . General Motors is not the appropriate organization for purely intuitive executives, but it provides a favorable environment for capable and rational men. In some organizations, in order to tap the potentialities of a genius, it is necessary to build around him and tailor the organization to his temperament. General Motors on the whole is not such an organization. . . . (pp. 433–34)

Cordiner, talking about the work of managers, expressed a similar thought:

. . . The work had to be made more manageable so that it could be understood and carried out by people of normally available energy and intelligence, thus leaving no requirement for the so-called indispensable man. (p. 46)

Cordiner made it clear that the kind of managers that he wanted at General Electric were team players:

. . . There is no question but that decentralization can set up powerful centrifugal forces that could pull a company apart. We have had to discourage managers from pre-empting, through squatters' rights, everything they could see. They had been suppressed by strong hands, and the power and authority given to them under decentralization was raw meat. Maybe they were "overtrained" because they sometimes became so independent that they wanted neither advice nor restrictions in the interests of the whole Company. I am greatly concerned when a man talks about "my organization," "my division," or "my men," for all of us are just passing by. (p. 76)

We have quoted at length from Sloan and Cordiner because it is clear that each man had a strong and cohesive philosophy about decentralized management, and believed that a broadly shared understanding of that philosophy within their corporations was essential if decentralization was to be effective. Decentralization requires more

than a philosophy, of course, and we turn now to an examination of the actions that must be taken once corporate managers have made the decision to decentralize the management of the firm.

Implementing decentralization

Aware of the benefits to be obtained from decentralization, and the pitfalls to be avoided, how is effective decentralization achieved? The first answer to that question must be that there is no single approach that is universally applicable. This point was so important to Sloan and Cordiner that they both referred to it as their "thesis." First, Sloan:

. . . It has been a thesis of this book that good management rests on a reconciliation of centralization and decentralization, or "decentralization with coordinated control."

Each of the conflicting elements brought together in this concept has its unique results in the operation of a business. From decentralization we get initiative, responsibility, development of personnel, decisions close to the facts, flexibility—In short, all the qualities necessary for an organization to adapt to new conditions. From coordination we get efficiencies and economies. It must be apparent that coordinated decentralization is not an easy concept to apply. There is no hard and fast rule for sorting out the various responsibilities and the best way to assign them. The balance which is struck between corporate and divisional responsibility varies according to what is being decided, the circumstances of the time, past experience, and the temperaments and skills of the executives involved. (p. 429)

Then, Cordiner:

. . . If I have any thesis, it is that each company should study, for itself, the particular conditions that will determine its future, and out of such detailed study should evolve a philosophy and structure that is fully appropriate for an individual company. . . . (p. 41)

Despite these caveats, we aspire in this study to say something more definitive and operationally useful about how decentralization can be achieved. In broad terms, corporations achieve a decentralization of authority and responsibility in three ways: philosophically, physically, and systemically. Of these, instilling a philosophy of decentralization across an organization, as Sloan and Cordiner have described, is surely the most important and the most difficult to achieve. In this section we have dealt extensively with the philosophy of decentralization in recognition of its importance, but Cordiner also

points out the need for a "structure that is fully appropriate," and it is to this topic that we now turn.

RESPONSIBILITY AND AUTHORITY

It is useful to think about the management structure of an organization along two broad dimensions. One is conceptual. Ask any manager to describe the structure of his firm, and he will usually start by sketching an organization chart to depict the progressive division of responsibilities among the hierarchy of managers of which he is a part. We will refer to that conceptualization as the "responsibility structure" of the firm, defining responsibility as *the set of corporate activities with which a manager is concerned and for which he is held accountable*. The responsibility structure is the centerpiece for a broad set of management systems, policies, and procedures which are designed to support and reinforce the distribution of responsibilities shown on the chart. A more complete discussion of these management systems will be presented in Chapter 4.

The other dimension, so obvious and tangible that it is often overlooked, is physical. The typical business corporation owns an array of physical resources: offices, laboratories, manufacturing plants, and warehouses, and all of these facilities are inhabited by another physical resource of the firm, its employees. At the lowest organizational level in almost every corporation, these resources are grouped into small functional pools that can usually be identified geographically: the sales office in Wichita, or the casting shop in Building 12. These pools are the fundamental building blocks upon which corporate managers erect a managerial hierarchy that reaches from the lowest operating level to the chief executive officer. We will refer to that hierarchy as the "authority structure" of the firm, defining authority as *the set of corporate resources under the custody of a manager and for which he has the power to decide how the resources are utilized*.

The distinction between responsibility and authority can be confusing, because in many situations—particularly at relatively low managerial levels—there is no significant difference between a manager's concern for a set of activities and his or her custody of a set of resources. The distinction is also irrelevant for the chief executive officer—his responsibility and authority are equivalent. But for managers in between the highest and lowest levels there can be an important difference between custody and concern, between the power to control physical resources and the accountability for results that is usually measured in financial terms.

The distinction between the responsibility structure and the authority structure shall be explored at some length because it seems useful in helping us to deal with both the question of how to achieve decentralization and the tougher question of how much decentralization is "appropriate." One of the first things to observe is that the organizational bedrock, the lowest level in the authority structure, is physical and changes very slowly over time. Corporate reorganizations may come and go without changing the lowest level authority structure at all.

Consider the hypothetical example of a manufacturing company with 20 plants scattered across the country. If the company is functionally organized, the manager of the plant in, say, St. Louis reports to a superior who is a part of a hierarchy for managing the manufacturing function that reaches all the way up to the chief executive of the corporation. If that company decides to decentralize by creating a set of division general managers, each responsible for a defined set of product lines, the old functional hierarchies may be disbanded in favor of the new divisional organization. But there will still be a manager responsible for the St. Louis plant whose authority over the activities in that plant will not be affected. That plant manager may now report to a different boss, a division general manager, and the activities within the plant may be somewhat different than they were before, but the plant manager's authority to direct those activities is likely to be unchanged.

Efficiency and adaptability

The last quote from Sloan cited above identified two "conflicting elements" that must be managed by any business corporation. On the one hand, there is the need for "efficiency," the need to ensure that resources are not wasted in manufacturing a product of specified quality as economically as possible. At the same time, corporate managers must be concerned with the "adaptability" of their organization in a competitive marketplace, the need to ensure that existing products can be sold profitably, and that their line of products is modified and extended to match or anticipate changes in the needs of their customers. The issue is not either/or, but how to achieve both.

Corporate managers deal with that issue in their design of the responsibility structure for the firm. In broadest terms, a choice must be made among three basic forms of organization: (1) a centralized, functional organization, (2) a decentralized, divisional organization,

and (3) an emerging, mixed form called a matrix organization.⁵ The sequence in which these forms are listed reflects not only the chronology of the development of newer forms but also a progression in the complexity of the form of organization; matrix organizations are considerably more complex than functional ones. Let us briefly examine the functional and matrix forms, and then we will return to our analysis of the divisional form of organization.

Functional organizations. There are two primary virtues of the functional form of organization. First, the responsibility structure and the authority structure are in complete alignment. The manager of that St. Louis plant feels no conflict between his responsibility and his authority for the relatively small pool of resources that he manages, and the same situation exists for his counterpart at corporate headquarters, the vice president for manufacturing. That top-level functional manager is responsible for manufacturing all the products sold by the firm, and he has direct line authority over the large pool of resources necessary to get that job done.

Second, a functional organization has the potential for great efficiency, a potential that is created by the close alignment of responsibility and authority within each functional activity. Efficiency can frequently be measured in terms of the quantity of inputs required to produce one unit of output, and functional managers—from the top to the bottom of their hierarchy—focus on finding more efficient ways of combining inputs to produce the specified output. As a general statement, the larger the total pool of resources, the more efficiently they can be managed because of economies of scale. These economies, in part, result from physical technology: the ability to construct and use the output from the most efficiently sized manufacturing plant, for example. But economies also result from management technology, honing the specialization of effort on both the factory floor (i.e., special-purpose equipment) and in supporting activities (i.e., centralized production scheduling).

The disadvantage of a functional organization, from the point of view of the corporate president, is that it may work too well. The

⁵ As a practical matter, many corporations use a combination of these forms of organization. For example, as the tobacco companies diversified over the last decade or two, several of them went through an organizational phase in which functional executives in the tobacco business reported to the chief executive at the same time that divisional general managers for the newly acquired product lines reported to the same chief executive. Also, in some decentralized corporations, the divisions may be organized in matrix form.

danger in this form of organization is that his principal subordinates become too identified with their functional bailiwick, striving for ever greater efficiency, leaving no one but the president to worry about the adaptability of the enterprise to changes in its environment. The president is the only executive who can look dispassionately at the interrelationships among the functional activities; the only one who can view the business as a whole and worry about how to make the whole greater than the sum of its functional parts; and the only one who can resolve the inevitable conflicts that arise among his functional subordinates.

The classic example of functional conflict in many businesses occurs between manufacturing and sales. The sales manager wants a broad line of innovative new products, and quick delivery to customers. This makes the most efficient use of his sales force because it reduces the likelihood of losing orders to competitors. The plant manager would like to manufacture a few items in long production runs and have a comfortable backlog of orders. The efficiency of his plant can be optimized under these conditions. The conflicting objectives of these two managers frequently focuses on the finished goods inventory which serves as a buffer between the two functions. On that issue both managers can agree: the larger the inventory, the better. But who is responsible for the capital tied up in inventory? Assigning that responsibility to one manager would infringe on the authority of the other. It is not unusual for the president to retain responsibility for the inventory, managing it as best he or she can in a manner that satisfies neither subordinate completely, and thus perpetuates the conflict.

Managing a business requires a concern for both efficiency and adaptability. Efficiency thrives on repetitiveness; adaptability almost always means change. The two goals are in conflict, and the trade-offs between them cannot be resolved by some precise managerial calculus. Change is made in the face of uncertainty, and, before the fact, the results are always ambiguous.⁶ In a functional organization, the president retains both the responsibility and the authority for making these difficult business decisions. Managerial ambiguity is lodged at the top of the organization, thus permitting functional managers to pursue their quest for efficiency with a single-minded determination.

⁶ Webster's first definition of this adjective is "Doubtful or uncertain especially from obscurity or indistinctness," *Webster's New Collegiate Dictionary* (Springfield, Mass.: G. & C. Merriam Company, 1976).

Matrix organizations. A radically different form of organization is the matrix structure. This form was developed by large corporations in the aerospace industry beginning in the early 1960s. Those companies, then functionally organized, found themselves plagued with cost and schedule overruns on government contracts because each functional manager was responsible for only a phase of the project and no single manager was responsible for the total performance on the contract. The initial means for coping with this problem was to appoint a "project manager" for each major contract. His job was to work laterally across the functional hierarchies that made up the formal organization, trying to ensure that each functional department performed its tasks within the time and budget constraints, coordinating the various functional activities required for the project, and handling all relationships with the customer, the government contracting officer. The structure was initially conceived of as a grid, with functional managers across the top, and a temporary overlay of project managers down the side. The evolution of this form of organization has been studied and documented by Davis and Lawrence, and their conceptualization of a "mature matrix" tips that grid onto one end in the form of a diamond-shaped organization as shown in Figure 2-1.⁷

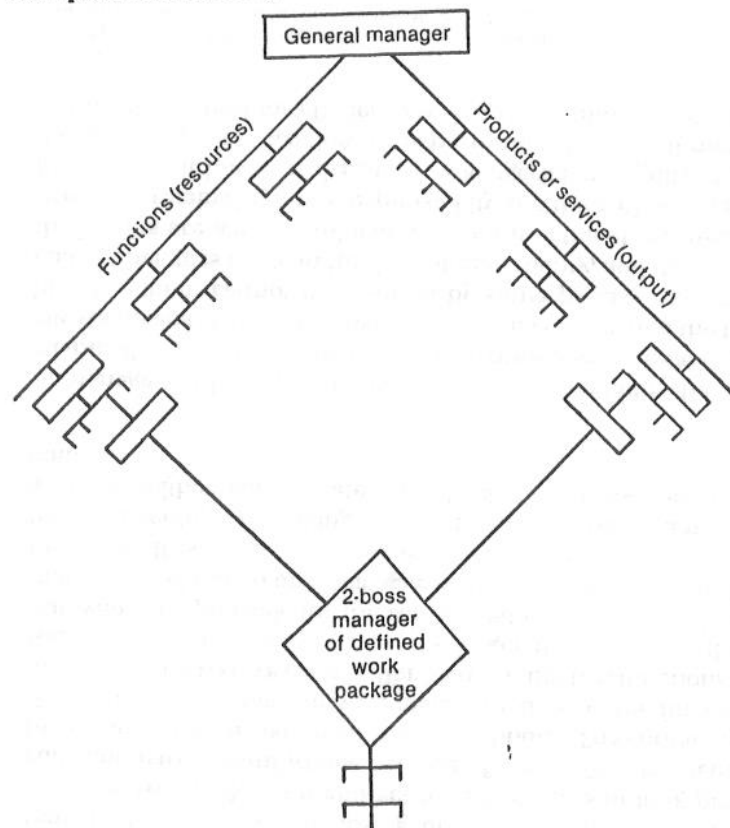
The advantage of the matrix organization is that it retains the existing functional structure, with its focus on the efficient management of inputs, and adds a new set of managers who are concerned with the outputs of the organization. A managerial focus on outputs captures the central idea in Sloan's concern for adaptability, although project managers in the aerospace industry have a much more restricted sphere of responsibility than division general managers in a decentralized firm. The designers of the matrix organization did not, of course, invent the idea of a managerial focus on outputs; the divisional form of organization was well-established in the 1960s and, in its adaptation into the matrix organization, project managers were conceived of as "mini-general managers."⁸

A matrix organization designed to achieve both efficiency and adaptability, a simultaneous managerial focus on both inputs and outputs, is extremely complex. The primary cause of this complexity, as suggested in Figure 2-1, is the interdependencies that exist between the managers on the two arms of the matrix. A disadvantage of this struc-

⁷ Stanley M. Davis and Paul R. Lawrence, *Matrix* (Reading, Mass.: Addison-Wesley, 1977), p. 22.

⁸ *Ibid.*, p. 41.

Figure 2-1
Example of a matrix design



Source: Davis/Lawrence, *MATRIX*, © 1977, Addison-Wesley, Reading, Massachusetts. Fig. 2.1. Reprinted with permission.

ture is that there will still be conflicts between the two types of managers that will have to be resolved by the general manager. It is feasible for the general manager to play that role when the set of products or services is relatively homogeneous, as in an aerospace company or within a division in a decentralized firm. The matrix structure is less likely to work—or to be needed—as a corporate form of organization when the diversity of products and services is fairly broad.

But the intent of the matrix structure is to provide a mechanism by which most conflicts between the management of inputs and outputs can be resolved at a relatively low level in the organization. A central figure in this structure is what Davis and Lawrence call the “two-boss manager.” The authority structure is still intact—that manager still

has the power to direct the activities to be performed by his or her small pool of resources—but the responsibility structure has been intentionally bifurcated. This job is the very definition of ambiguous, that is, “capable of being understood in two or more possible senses,”⁹ because the two-boss manager must simultaneously manage for both efficiency and adaptability. Ambiguity is pervasive in a matrix organization, but a lot of it rests at the bottom.

The implicit matrix in a decentralized firm

The divisional form of organization used by decentralized firms is perhaps best viewed as a very adaptable structure that can be designed to bridge the entire gap between a pure functional organization on the one hand and a mature matrix organization on the other. Stated another way, based on the 291 manufacturing corporations that we sampled, there is no workable way to define a “pure” divisional form of organization. Sloan and Cordiner have defined it conceptually, but their thesis is that the specific design must be “appropriate” to the circumstances in each individual company. We are now in a position, however, to be somewhat more explicit about how that appropriate design is achieved; at least, we can identify the design decisions that corporate managers must make.

The easiest way to make those design decisions explicit is to continue the hypothetical example of a functionally organized manufacturing firm that has decided to decentralize. To keep the example simple, we will assume that it is perfectly obvious that three product divisions should be established, and that the general manager of each division will report to the corporate president and will be responsible for the profitability of a line of products. The implementation of this decision to decentralize requires top management to deal with two broad types of organizational design issues:

1. To what extent, if at all, should each of the existing functional hierarchies be disaggregated?
2. If the partial or complete disaggregation of a functional activity is desirable, to which of the profit center managers should each pool of physical resources be assigned?

Those questions cannot be answered simply at the policy level, and cannot be dealt with sequentially; for each function they must be resolved simultaneously and in very specific detail.

⁹ Webster's New Collegiate Dictionary, definition 2.

The decision to decentralize does not automatically mean that the existing centralized functions must immediately be disaggregated. In fact, at the initiation of decentralization a major force that constrains disaggregation is purely physical. The responsibility structure of the firm may be changed immediately and, literally, with the stroke of a pen. The lowest-level authority structure, involving dozens or hundreds of pools of physical resources, can also be changed but only more slowly. Even if physical disaggregation is feasible, corporate management must still determine whether or not such a disaggregation is desirable. Many decentralized corporations have answered that question in the negative, for some functions at least.

Nearly 17 percent of the companies in our survey, for example, have decided to retain the research and development function as a totally centralized corporate activity, and only a little over 47 percent of our companies have completely decentralized the research function into their profit centers. On the other hand, only 6 percent of the companies in our sample continue to maintain a completely centralized sales function in their corporations, while nearly 70 percent have completely disbanded the corporate sales activity. For both of these functions, and for others, the issue is not one of all or nothing; nearly 58 percent of the companies do some research as a corporate functional activity, with the remainder being performed within the profit centers, and 31 percent of the companies have a corporate sales force that performs part, but not all, of the selling function for its profit centers.

These data demonstrate that corporate managers can exercise great discretion in deciding whether, and to what extent, each of the operating functions should remain centralized or should be disaggregated. Disaggregation can best be thought of as a decision to reassign functional authority. Our hypothetical company still has that St. Louis plant, and if the manufacturing function is not disaggregated, the plant manager will continue to report to a corporate vice president for manufacturing. Disaggregation would mean a change in the responsibility structure of the firm, in that the plant manager will now report to one of the profit center managers. That profit center manager, thereby, assumes responsibility for the efficient management of the St. Louis plant, relying on his functional subordinate, the plant manager, to achieve that goal. For the 20 plants owned by this hypothetical company, each of the plant managers must be assigned to report to a higher level executive who will hold him responsible for his performance. Some of those plant managers may still report to a corporate vice president for manufacturing, while the others will be assigned to one of the three new profit center managers.

In designing a new, decentralized responsibility structure, corporate managers must make a decision about *each* plant and, more generally, about each pool of physical resources which make up the underlying authority structure of the firm. Assuming that the plants have been operating as a part of an integrated manufacturing activity, realigning them into a new responsibility structure can pose difficult choices. Some of the plants, let us assume, process materials and produce components which are used in all of the products sold by the company. Responsibility for these plants might be retained by the functional manager responsible for manufacturing at the corporate level. Other plants, fortunately, manufacture only a single end product and it is natural to assign them to the profit center manager responsible for that product line. Unfortunately, the remaining plants do not fit neatly into either of the first two categories; they are physical resources that are needed by more than one profit center but not by all of the profit centers in the firm.

Plants in this third category may exist for a variety of reasons. For example, one plant uses a specialized technology to manufacture a variety of products, some of which are sold by two of the new profit centers. Another plant produces only a single product line, but at an intermediate stage it manufactures components which are then shipped to another plant for incorporation into a product line sold by a different profit center. Whatever the cause, these plants exist and their managers must report to higher executives. Corporate managers do not make these assignment decisions arbitrarily; but if no better rationale exists, the plant may be assigned to the profit center manager whose products require the largest share of the capacity of a particular plant.

Plants such as these are not rare; 85 percent of the companies in our survey are organized in such a manner that manufactured products are transferred between profit centers. Nor is this interdependence among profit centers limited to the manufacturing function. Seventy percent of our sample companies have joint facilities (plants, offices, etc.) which are shared by two or more profit centers, and in more than 50 percent of the companies one profit center may perform administrative services on behalf of another.

Once this entire set of organizational design decisions has been made, it is then possible to stand back and survey the resulting patterns of responsibility and authority that emerge. An attempt to describe that pattern for the manufacturing function in our hypothetical firm is shown in Figure 2-2. In this example, we have assumed that the total manufacturing costs amount to \$400 million per year,

Figure 2-2
The implicit matrix in a decentralized firm (manufacturing costs, in \$ millions)

The business responsibility structure (managing outputs for adaptability)	The functional authority structure (managing inputs for efficiency)				Total manufacturing costs
	Corporate manufacturing services	Profit center 1	Profit center 2	Profit center 3	
Profit center 1	25	60	10	5	100
Profit center 2	60	—	85	5	150
Profit center 3	75	—	5	70	150
Total manufacturing costs	160	60	100	80	400
Number of plants	8	3	5	4	20

and that each of the 20 plants incurs \$20 million of these costs. This simple numerical example will help to clarify the concepts of “business responsibility” for a product line or market segment and “functional authority” for a pool of physical resources.

Figure 2-2 can be read both vertically and horizontally, and we will discuss it in that sequence. As shown at the bottom of Figure 2-2, eight of the plants have been retained in a centralized manufacturing function reporting to a corporate vice president. The outputs of those plants are transferred to the three profit centers in the amounts shown in that column. The three plants now assigned to the manager of Profit Center 1 are dedicated to his product line; no products are transferred to the other profit centers. Profit Centers 2 and 3 do transfer a minor part of their output to each of the other profit centers, but most of the capacity is used “locally,” that is, to manufacture products for the line of business that the profit center manager is responsible for.

Looking horizontally across Figure 2-2, we see that the total manufacturing costs of the products that the manager of Profit Center 1 sells in the competitive marketplace amount to \$100 million. Of these costs, \$60 million are incurred in that center’s three plants, \$25 million in corporate plants, and the balance in plants run by the other

two profit centers. Each of the three profit centers provides nearly half or more of its manufacturing requirements, and draws the remainder from plants run by two or three other managers.

The intent of this rather complex set of relationships is twofold. First, the entire \$400 million must be spent efficiently. The functional authority of each of the four managers across the top of Figure 2-2 is conveyed by having physical custody of a defined set of corporate resources. Functional authority can be measured by the costs incurred to operate those resources. A manager with functional authority is responsible (concerned and accountable) for the efficient utilization of the physical resources under his custody. Second, the entire \$400 million must also be spent adaptively, to use Sloan’s term. The business responsibility of the three profit center managers shown at the left of each row in Figure 2-2 is defined in terms of market segments or product lines. Business responsibility can be measured by the revenues received from the sale of those products minus the costs incurred to generate those revenues. A manager with business responsibility has access to the corporate resources that are needed in order to generate revenues and is responsible (concerned and accountable) for the profitable utilization of those resources.

The primary message in Figure 2-2, however, is that each profit center manager really plays two distinct managerial roles: he is both a functional manager and a business manager. As a functional manager, his role appears to be quite straightforward: his responsibility (set of concerns) and authority (custody of resources) are equivalent. As a business manager, his situation is more complex. He does have physical custody of some of the resources needed to manufacture and sell his products, but he must also use resources that are physically located either in other profit centers or in a corporate functional unit. When a profit center manager wants to make a change that will improve the adaptability of his products in their competitive environment, he must persuade other managers, who have functional authority over the resources that will be affected, to modify their operating routines in order to accommodate the proposed change. The profit center manager’s responsibility for adaptability is clear, but his responsibility exceeds his authority to effect change.

Looking again at the “straightforward” functional role of the profit center manager, we now see that it, too, is fuzzy. Some of his physical resources are also used to meet the needs of other profit center managers, and a unilateral action that would improve opera-

tional efficiency cannot be taken without recognizing the impact that that action might have on the activities of other profit center managers. Further, he must attempt to accommodate changes proposed by other profit center managers even though those changes may not contribute to the efficient utilization of his resources.

Viewed in this way, profit center managers must cope with the conflicting needs of efficiency and adaptability in much the same sense that the president of a functionally organized company does. But the profit center manager faces a double ambiguity in his job. He must propose changes in the way that he runs his business even though the results, before the fact, are uncertain and ambiguous. And, analogously to a "two-boss manager" in a matrix organization, he can conceive of his job as two tasks: managing inputs for efficiency and managing outputs for adaptability.¹⁰ Somebody has to manage ambiguity in every business corporation. In the functionally organized firm, the ambiguity is at the top; in the mature matrix organization, the ambiguity is at the bottom—and also at the top. The effect of decentralization—and the intent of it—in the divisional form of organization, is to place most of the ambiguity on the shoulders of the profit center managers.

Once corporate managers decide to decentralize their firm, the primary implementation device is the design of a new responsibility structure. A myriad of organizational design decisions must be made as the responsibility for the physical resources of the corporation is reassigned, in part at least, to the new profit center managers. This is "how" decentralization is achieved. We turn now to the question of "how much" decentralization is "appropriate" for the firm.

THE STRATEGY OF DECENTRALIZATION

The issue of how much decentralization is appropriate can be more sharply cast as a pragmatic decision on organization design: how many profit centers should we have? For some companies the

¹⁰ For further discussion of this point, see Stephen A. Allen, "Organizational Choice and General Management Influence Networks in Divisionalized Companies," *Academy of Management Journal*, September 1978. "The basic organizational choices identified in this paper are the same as those involved in a two-dimensional matrix organization along functional and business lines. . . . Matrix organizations do not seem to involve dimensions of organizational choice different from those encountered in the divisional form. . . ."

answer to that question may be obvious, as we assumed it was for our hypothetical company above, but in most companies that question deserves careful thought. The answer to that question can simplify, or greatly complicate, the new responsibility structure for a firm, and many companies decide that simplicity is not a sufficient virtue unto itself, for reasons that we will now explore.

Some profit centers are "natural," as in the case of an independent business which has been acquired and merged into a larger firm. Even then, although it would be feasible to treat that business as an independent profit center, if part of the motivation for the acquisition was to obtain operating synergy, it will be necessary to create interdependencies with other operating units in the firm. As a result, the responsibility and authority of that profit center manager will turn out to be quite different than that of his predecessor who was president of an independent company.

Nevertheless, the concept of a natural profit center, a "genuine" profit center in Solomons' terms, deserves exploration. Such an operating unit has two important characteristics. First, a natural profit center can be defined in terms of a pool of physical resources that are solely dedicated to the design, manufacture, and sale of its line of products. Second, and far more important, a natural profit center can also be defined in terms of the external market that its products are intended to serve. The success of General Motors in overcoming Ford's early lead in the automobile business was due, in large part, to a recognition by Sloan and his colleagues that the market for automobiles in the United States was not one market but several. In order to implement its strategy of market segmentation, General Motors needed to retain an externally focused marketing orientation on the part of some of its managers. Sloan achieved that by creating profit centers and by charging each profit center manager with the responsibility for creating and continually adapting a line of automobiles that would appeal to his assigned market segment.

The profit centers that Sloan established were not "natural" in terms of independent physical resources—the operating efficiencies to be obtained in the large-scale manufacture of automobiles were too great to ignore—but the market definition for each profit center was sufficient to permit each profit center manager to understand the scope of his responsibility. As a more general statement, during the late 1950s and early 1960s corporate managers in a great many U.S. manufacturing companies suddenly realized that they were manufacturing-oriented when they should have been more

marketing-oriented. Theodore Levitt contributed to the trend with his prize-winning article on "Marketing Myopia,"¹¹ and by observing cryptically in a later article that "the customer consumes not things, but expected benefits . . . not quarter-inch drills, but quarter-inch holes."¹² Corporate managers began asking themselves, "What business are we really in?", then developing an explicit marketing strategy, and finally adopting a divisional form of organization in order to decentralize the responsibility for pursuing those markets.

Corporate strategy is the overriding factor in determining the number of profit centers in a decentralized firm. It is useful to distinguish between two aspects of corporate strategy: diversification strategy and business strategy. The companies in our survey vary greatly in the extent to which they have diversified into multiple lines of business. As reported in Chapter 1, our sample spans a spectrum from Single Business firms to those engaged in a number of Unrelated Businesses. It is not surprising that the latter type of firm will decentralize the responsibility for serving each of its markets. And, as we shall see in the next chapter, profit center managers in highly diversified firms are less interdependent in terms of physical resources than their counterparts in less diversified firms. It is somewhat more surprising that firms engaged in a single line of business may also decide to decentralize the responsibility for segments of that business. Decentralization by a Single Business firm rests on the business strategy that it is pursuing in its competitive environment.

As an example of how business strategy determines the number of profit centers to be found in a decentralized firm, let us take the case of a large-scale manufacturer of home appliances.¹³ It is engaged in a single line of business, but has decentralized its operations into six profit centers. Three of these are "product" profit centers, one each for laundry equipment, refrigerators, and electric stoves. The other three are "manufacturing" profit centers, one each for electric motors, gears and transmissions, and chrome products. All six profit center managers are expected to earn a profit by designing, manufacturing, and selling their respective lines of consumer products or industrial components. The profit centers are highly interdependent, however, with 70 percent of the sales of the manufacturing profit centers being made to the product profit centers. The managers of

¹¹ *Harvard Business Review*, July–August, 1960, p. 45.

¹² Theodore Levitt, "The Morality(?) of Advertising," *Harvard Business Review*, July–August, 1970, p. 91.

¹³ General Appliance Corporation case number 6-160-003, Harvard Business School

the product profit centers are not required to purchase components from the manufacturing profit centers, but when they do the price is negotiated between the two profit center managers just as it would be negotiated between an independent buyer and seller. Nevertheless interdivisional squabbles over transfer prices are frequent and sometimes bitter.

A different responsibility structure might easily be adopted to reduce or eliminate these problems. The plants that manufacture industrial components could be treated as a corporate functional activity, and the corporate functional manager held responsible for the efficient manufacture of components for the product profit centers. The product profit center managers would be required to obtain components from the corporate facilities, and all such transfers would be valued at standard manufacturing cost or some variation thereof. The reason that this company has six profit centers rather than three—or none—is that corporate management conceives of the firm as being engaged in six distinct and competitive lines of business. The manager of the refrigerator division competes for a profitable market share against other companies that manufacture refrigerators, some of whom buy their electric motors from independent suppliers. Similarly, the manager of the electric motor division competes for profitable market share against other manufacturers of electric motors, some of whom do not have captive end-product divisions. The competitive environment demonstrates that it is possible to operate profitably in all six markets, and the business strategy of this firm is to do just that. The fact that only 30 percent of the output of the manufacturing divisions is sold to outside customers does not mean that the company "really" earns a profit only on outside sales; both corporate and divisional managers believe that the profit on inside sales is just as real because it is a profit that would otherwise have been earned by an outside supplier.

In such a situation, of course, there is no "real" truth. The internal profits in this case are real because the managers believe in their strategy. An identical firm whose managers decide to pursue a strictly consumer-oriented strategy might believe that "profits" on manufactured components are really fictitious.

The business strategy of a Single Business firm may be viewed as a determination by corporate managers of how to compete in their industry and in how many segments. For each segment thus chosen, a profit center manager must be named in order to assign responsibility for the evolving adaptation of a line of products designed for that

market. In this sense, the responsibility structure of any firm is designed to implement its strategy, both its diversification strategy as to the number of lines of businesses in which to engage and, within each line, the business strategy that is adopted to compete successfully in selected market segments.

How do corporate managers implement their decision to decentralize? Surely, the answer is, "Carefully." The lowest authority structure, those functional building blocks, are like tiles in a mosaic. Those tiles must now be rearranged, each piece carefully placed, to form a new pattern—a new responsibility structure—that has coherence and strength. If that structure is strong, in the sense that it is firmly grounded on the foundation of an explicit corporate strategy, then the new profit center managers will understand the scope and intent of their responsibilities and can attack those tasks with drive and initiative.

4

WHARTON REPROGRAPHICS

Control with Fairness in Transfer Pricing

Robert G. Eccles



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Control with Fairness in Transfer Pricing

Robert G. Eccles

Imagine the following conversation in a company president's office. He is talking with the general manager of a division selling products internally (seller), the general manager of a division buying these products (buyer), and a professor who has read everything that has ever been written about transfer pricing.

President: I wish somebody could tell me once and for all how we should do our transfer pricing. All the methods we've tried have problems, and often both the buyer and the seller claim they're being treated unfairly.

Professor: The answer is really very simple. When the product of the selling division is sold in a perfectly competitive market, the buying division should pay market price, with perhaps a discount to recognize that selling costs and other such expenses are saved on internal transactions. The buyer should be free to obtain this product either internally or from external suppliers.

Seller: That's a pretty fair arrangement. Of course, selling internally is usually more trouble than selling externally, so I don't think a discount is appropriate. After all, the buyer treats me in ways he

wouldn't dare treat an outside supplier. He delays and cancels orders and demands product with short lead times. What's more, why should the company lose out on profits by buying outside when I have spare capacity?

Buyer: In the real world, Professor, there are very few perfectly competitive markets. I don't think market price is necessarily the best idea, although I agree that I should be free to buy from whoever I want. After all, my performance is measured by how well my business does. It isn't fair to hold me responsible for profits and then interfere with those kinds of decisions. I can usually get better prices, sales support, service, and technical cooperation from outside suppliers.

Professor: Well, you're right that market price isn't the best approach in imperfectly competitive markets. In that case the best method, when there is spare capacity, is to use marginal cost and require that you buy inside. That'll maximize company profits.

President: That sounds good to me.

Buyer: Our accounting system doesn't measure marginal costs, but if they're something like variable costs, I think it's fair. The price will be so much lower that I'll live with the inferior product and service I'm used to getting.

Mr. Eccles is an assistant professor of both business policy and organizational behavior at the Harvard Business School. This article is based on four years of research, the results of which will be published in a forthcoming book.

Editor's note: All references are listed at the end of the article.

Seller: You've got to be kidding! I have fixed costs to pay for, and I should get a fair profit on internal sales, just like I do on external sales. I'm evaluated and rewarded on the performance of my business. My reported earnings would be unrealistically low, which would lower my people's morale. Do you mean to tell me that the products I make especially for you, that use up my capacity, should be transferred at marginal cost?

Professor: Well, now you're talking about a different situation. If the amount is fairly small, you should get a markup on full cost to approximate what the market price would be, so that you get a fair return.

Seller: That's more like it. I always knew you professors could reach intelligent decisions if given enough information.

Buyer: Wait a second. How are you going to determine a fair market price on something that isn't sold in the market? You professors have no idea how much time we spend arguing about what a fair market price is, even on products that are sold on the outside. But you've changed the subject. Let's get back to products sold inside.

Professor: My theory answers that problem as well.

Seller: It had better answer for situations where I don't have spare capacity. There are times when demand for my product is very high, and he's lucky to have an assured source of supply. Are you telling me I should get only marginal cost when I have customers knocking down my door, willing to pay premium prices so they can keep up with their own demand? Some of these customers are his competitors. If I sell to them, *he'll* lose sales. I think my product is worth a whole lot more than your stupid marginal cost.

Professor: Oh dear, you're making things more complicated, but that's no reason to get upset. My theory addresses this problem, known in academic circles as "demand dependence." Here it is necessary to use sophisticated mathematical programming techniques. While the procedure is too complicated to explain, shadow prices can be used to derive the transfer price that maximizes profits. It's somewhere between marginal cost and market price.

Buyer: Look, Professor, we're talking about *real* products and *real* costs—not this shadow world of yours. What you're ignoring is the fact that I'm one of his largest customers, and without my volume his costs would be much higher, which would make his profits much lower. Somehow your theory had better take account of the profits I'm making for him.

Professor: Well, I'm afraid you're now talking about what we call "technological dependence," a much more complicated situation. To be honest

with you, I'm not sure it's always possible to find a mathematical solution when this condition holds. However, I'm sure that given enough time and a sufficiently large computer, I could develop the necessary equations and work out their solutions. Of course, we would have to specify the constraint equations for the algorithm used to solve the objective function, and a global optimum exists only—

President: Hold it! I haven't the faintest idea what you're talking about. It seems to me that if your solution is too complicated to explain, it's too complicated to use. And all this talk about time and computers—we have to make decisions *today*. Until you professors come up with something useful in practice, we'll just have to muddle along as best we can.

Attack on the Issue ...

Since the invention of profit centers more than 60 years ago, corporate managers and academics alike have been looking for a solution to the nagging transfer pricing problem. It has two parts: the sourcing decision and the pricing decision. How should a business unit choose between internal and external suppliers, and what price should be placed on the good if the internal supplier is used? ("Business unit" refers of course to any part of an organization acting as a buyer or seller in internal transactions and includes divisions, manufacturing and sales functions, and product-business-program dimensions in a matrix structure.) The transfer price may be determined first and become an input to the sourcing decision, or the decision to buy inside may be made before the transfer price is decided on.

Most of the research academics have done on this problem has been of little use to executives. Studies usually recommend marginal cost and mathematical programming solutions, but the few surveys that have been conducted show that these approaches virtually do not exist in practice. For one thing, they are simply too cumbersome. And, ironically, in spite of their complexity, they require simplifying assumptions that ignore the many factors managers must take into account.

I decided that the best way to study transfer pricing and to develop a theory that would have clear implications for practice would be to focus on managers' experience. In pursuit of this objective, I interviewed nearly 150 executives (CEOs, CFOs, group and business general managers, financial managers, and others) in 13 companies. Their industries are chemicals, electronics, machinery, and machinery components.

These interviews left no doubt that the key to the transfer pricing problem is strategy. Transfer pricing

schemes are a means of generating information and control for implementing corporate, business unit, and product strategy. The managers involved consider these schemes to be more or less fair. It is not always possible to satisfy both the control and the fairness objectives through the transfer pricing scheme alone.

There is no simple solution to the problem. It requires continuous attention through management processes. A company's transfer pricing policy and the processes for administering it depend on the particular situation and the direction the organization is going in.

Analysis in two dimensions. To help managers think analytically about the problem, I have developed a simple framework that recognizes transfer pricing's complexity in the real world. Two broad dimensions of strategy, applicable at the corporate, business unit, and product levels, are the basis for the framework I call the manager's analytical plane (MAP).

The first dimension of the MAP is vertical integration, that is, the extent to which the company carries on production and distribution activities that other companies could perform. Vertical integration results in interdependence between profit centers when each stage of the production and distribution processes is evaluated on the basis of profitability.

The second dimension is diversification, that is, the extent to which the company is engaged in different businesses. Diversification is determined by the extent of product-market segmentation. It results in an emphasis on the independent contributions of each business when they are separated as profit centers.

Although the dimensions can operate simultaneously, they are distinct. A company may integrate backward without diversifying by manufacturing a component that is not sold to external customers. Conversely, a company may add a product that requires no change in manufacturing and distribution capabilities. Often a company will use several transfer pricing policies depending on the strategy of the groups, business units, and products involved.

An executive can use the plane defined by these two dimensions to analyze his or her company (or business unit), since each location determined by the two strategic dimensions is associated with particular organizational characteristics. Five especially important characteristics are the nature of corporate strategy and the strategic planning process; the primary means of control by top management; the criteria for performance measurement, evaluation, and reward; the definition of fair-

ness in the company; and the nature of the managerial processes. The framework appears as a plane to emphasize the difficulty of categorizing organizations as discrete types and to acknowledge the complexity of the real world.

For analytical purposes, however, I present four "pure" types to help a manager think about the situation. These four types correspond to the corners of the MAP as shown in *Exhibit I*. Three of these, the *competitive*, *cooperative*, and *collaborative* types, are important for understanding the transfer pricing problem. (There is no transfer pricing in the *collective* organization.)

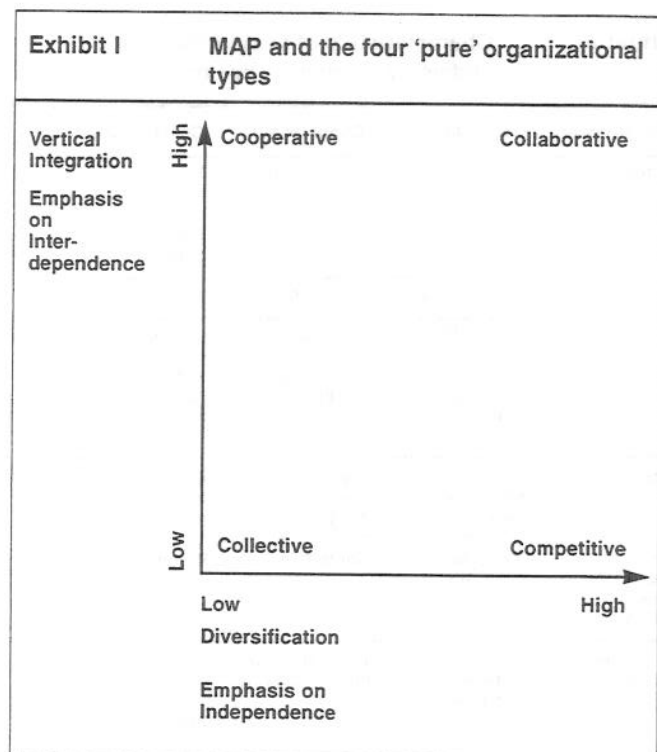
Exhibit II summarizes the characteristics of the three types. A company's transfer pricing policy (I use this term to include internal or external sourcing policy as well) depends on the organization's location on the plane and the direction in which it wishes to move. I'll take up each of these types in turn.

...in Competitive Organizations

Highly diversified organizations that have little vertical integration between business units represent the *competitive* type. The most dramatic examples are the conglomerate and the holding company. But more common are companies with several relatively autonomous divisions having all the necessary functions of a complete business and having little interdivisional dependence. Corporate strategy is the sum of the business unit strategies, and the strategic planning process is bottom-up.

The main control mechanism is management systems that measure the results of business unit actions, although organizational structure is also important. In these organizations, strategy implementation is most clearly reflected in these measurement systems. Since the business unit general manager has great authority over resources, upper management's control is exercised by measuring performance and comparing it with objectives. The entrepreneurial responsibility of business unit managers receives emphasis through measurement of the units as profit or investment centers.

The criteria for performance measurement, evaluation, and reward stress comparison of business unit performance with a budget or plan, similar competitors, and even sibling units. Use of similar performance measures for all units generates enormous internal competition. Since the measurement and evaluation of the use of resources and their allocation in a competitive organization resembles resource allocation in a market, the definition of fairness is similar to judgment meted out by an



impartial spectator, namely the market.

Competitive organizations usually decentralize decision-making responsibility to the business unit level. This results in a bottom-up process for handling corporate-business unit relationships and a distributive bargaining process in business unit-business unit relationships. The latter is characterized by "win-lose" bargaining, which results from the attempt of each business unit to maximize its objectives, even at the expense of the other.

When the business units do not depend on each other very much, the costs of local decisions that are not best from a corporate perspective are small compared with the problems created by a transfer pricing policy that interferes with the stance of the impartial spectator and with the bottom-up and distributive bargaining processes. In its purest form, a competitive organization would have no transfer pricing policy, leaving the business units free to establish trading relationships as companies in the open market. A "no policy" default on top management's part, however, frustrates vertical integration because it creates disincentives to internal trading.

The general manager of the semiconductor group in one of the electronics companies I studied explained the problem: "In my experience, sister divisions are more antagonistic to each other than to outsiders. Basically this is due to competition as to who is the best performer. There is the suspicion

that other divisions are doing something to get more than their share, especially when a product is forced on a division. Sister divisions are under more pressure because word about the first missed step could be picked up by the board."

Market-based pricing. A response to this problem is a policy of market-based transfer prices with constrained sourcing, such as giving inside suppliers a "last look" chance to meet outside quotes. In competitive organizations, transfer prices are used to select suppliers and customers and to value internal exchanges in a way consistent with the measurement of business unit performance.

One kind of market-based transfer price is cost-plus-profit markup. A buying unit may source a unique or proprietary good from a selling unit for which there is no market price since it is not sold externally. The seller establishes a cost intended to approximate the price if the product were on the market. Methods for determining the markup include comparable products, average gross profits, and average return on assets of the selling unit. Several of the electronics companies in my study used the cost-plus-profit method for proprietary products.

In competitive organizations, headquarters normally leaves the determination of market prices up to the business units involved. The result is distributive bargaining processes as each unit tries to negotiate the most favorable price. When top management does set policies that influence the transfer price, such as "list price less 25%," the ability of the units to establish "true" market price obviously is hampered.

A reason often given for using market-based transfer prices less some discount is the presumed absence of selling costs, receivables carrying costs, and credit risk. But as internal transactions come to resemble external ones, through the use of salespeople assigned to internal accounts, for example, the less justified this discount becomes in the eyes of the selling business unit.

One of the companies I studied that had the characteristics of the competitive type gave its divisions autonomy on sourcing decisions—they were free to buy inside or outside—and they were under no obligation to sell internally if the terms were unfavorable. Regardless of the size of their purchase, internal customers received goods at the most favorable price obtained by outsiders with the largest quantity discount. Nevertheless, in a number of instances, external vendors were chosen over internal ones. To top management and the division heads, these outcomes were in the best interests of the divisions and the company as a whole. As one

manager put it, "We don't want to do anything that would give a division general manager an excuse for not meeting his plan."

There are real advantages to leaving the decision to the business units. A manager of the semiconductor division of a second electronics company had recommended against a division's replacing its outside semiconductor supplier with the internal supplier even though the internal source stood to gain an additional \$4 million to \$6 million in sales. He explained why: "As long as Intel's product line is more comfortable and they'll jump through hoops to give us good quality, it's in the corporation's interest to stay with them."

When top management establishes constraints favoring internal transactions, as did a third electronics company by requiring that a "substantial percent" of semiconductor purchases be made internally during recessionary periods, both business units may find it unfair. A year after this policy took effect, a division manager who bought semiconductors noted with a wry smile: "I think we're still in a recessionary period. They raised prices a lot and were willing to lose a share of their business with us. The president deemed that the prices should hold and that we had to buy inside. They aren't happy, and we aren't either. They'd rather make investments in other areas that are more profitable for them and growing faster, some of them at 100% a year. But they had to continue to invest in areas that support our products."

Unit heads think that the no-policy default is the fairest situation because top management does not interfere with their autonomy—which is consistent with exercising control through results. As the head office gets more involved with interunit relationships, complaints of unfairness may rise. Nevertheless, top management may want to increase internal transfers because of excess capacity in the selling unit or to take advantage of proprietary technologies. One way of accomplishing this while attempting to preserve fairness is through a dual pricing policy.

Dual pricing. This policy combines the advantages of market-based pricing (the profit incentive for the selling unit) and of mandatory internal sourcing (e.g., the buildup of volume of the transferred good to reduce unit manufacturing costs). The buying unit receives the transferred good at cost, and the selling unit is credited with the market price. (The double-counting of profits is eliminated at a higher level in the organization.) As compensation for the interference with its flexibility, the buyer receives the product at less than market price, which enables

Exhibit II Characteristics of competitive, cooperative, and collaborative organizations

Characteristic	Competitive	Cooperative	Collaborative
Strategy	Aggregate of division's strategies	Total company strategy	Mutually defined total company business perspectives
Structure	Multidivisional	Functional	Matrix
Systems	Profits, ROI compared with budget, internally and externally	Costs compared with budgets and history	Combination of costs, profit, and ROI compared with budget
Processes	Bottom-up; distributive bargaining	Top-down; integrative bargaining	Iterative; mixed-mode bargaining
Method of managers' fairness evaluation	Impartial spectator	Shared fate	Rational trust
Top management control	Through systems on outcomes	Through structure on actions	Through processes balancing structure and systems

it to show greater profits.

Just as a transfer pricing policy can be used to maintain a company's location on the MAP, it can be used to move a company in the direction of a desired future position. A competitive organization can use a dual pricing policy to increase its vertical integration, moving the company "north" on the MAP. Three of the electronics companies I studied that were located in the competitive region of the MAP used this policy from time to time.

A dual pricing policy has its problems too. (Two of the three companies that had adopted it reverted to market-based transfer prices with sourcing freedom.) If the double-counting elimination is not forecast properly, the net income of the whole company will be disturbingly less than the sum of the net profits of the units. This is especially likely if the financial and control systems are inadequate, or if business is poor and the selling unit can't meet its external quota and so generates excessive internal sales.

Moreover, since the buying unit gets the product at cost, it has little incentive to negotiate the most favorable market price on the transaction. Actually, neither division has the same incentive to monitor the performance of the other, which is a central characteristic of the competitive organization.

Sometimes the cost can be even greater than the market price, as it is at the beginning of the product life cycle for products with significant learning

curve effects. This occurred at an electronics company, which had to make an exception for semiconductors.

Because of the problems, companies probably cannot use dual pricing for a long period of time for all products, although they may employ it for a few strategically important items. One electronics company, for example, set a dual pricing policy to enable a division selling batteries as a replacement part to price more competitively and regain lost market share.

Dual pricing is also used occasionally to bolster internal sales. An executive of an electronics company that used this policy for a few years described the experience this way: "The book-keeping system didn't have the ability to handle it. It didn't work out well since it was difficult to administer. But it did get more transfers going, so it was the right move at the right time."

...in Cooperative Organizations

In competitive organizations, the business units must compete with each other; in *cooperative* organizations they must cooperate with each other. An example of the latter is a highly vertically integrated chemical company, organized on a functional basis, where all the units are cost centers except for a single sales force that acts as a revenue center.

More generally, business units turning out intermediate products have two roles, as a profit center for external sales and as a cost center for internal transfers. Corporate strategy is established for the company as a whole, and business unit strategies are derived from it.

The primary mechanism of control in cooperative organizations is the organizational structure. Since responsibility for many decisions rests at the top of the organization, especially for those involving exceptions to corporate policy or trade-offs between functions, the authority vested in hierarchical position or generated through expertise is especially important for specifying the actions of business units.

Business unit managers in cooperative companies do not have nearly as much autonomy and as wide a range of responsibility as their counterparts in competitive organizations. Top management is more directly involved in day-to-day operations and exercises control directly through interactions with subordinates. It relies less on management information systems. In these organizations, executives pay a great deal of attention to learning the unique aspects of the company.

The criteria for performance measurement, evaluation, and reward are also very different in coopera-

tive organizations. Although managers use objective quantitative criteria—budgeted costs and revenue—these are largely based on comparisons with historical performances or budgets. Because of the interdependence between the units, top management uses more subjective criteria to determine whether a unit manager made her "numbers look good" at the expense of other units or whether, for example, the manufacturing unit stayed on a long production run rather than interrupt it and give priority to an important customer.

In cooperative organizations, because measurement and evaluation criteria are different for each unit, units compete with each other much less than they do in competitive organizations. Also, bonuses, salary increases, and promotions for individual managers and budgets for the business units are based primarily on total corporate performance. Thus, the definition of fairness in cooperative organizations is that of shared fate.

The philosophy in cooperative organizations is to centralize those decisions involving the interdependencies between business units that affect total corporate performance. Consequently, corporate-business unit relationships are managed through top-down processes, while integrative bargaining occurs between business units. In its win-win bargaining, each business unit tries to maximize corporate objectives, even at the expense of its own performance measures. Because a unit's contribution is not determined solely through quantitative means, the units have an incentive to perform well.

Because transfer prices strictly refer to exchanges between profit centers, in its purest form a cooperative organization would have *no* transfer prices. Many organizations, however, while closely approximating the pure cooperative type, have units that sell substantial quantities both inside and outside, forming quasi or partial profit centers. The transfer pricing policy for these organizations follows from the structure and systems. Internal transfers are mandated for both buying and selling units and the transfer price is full cost. Unlike in competitive organizations where the transfer price is a market price that determines whether sourcing will be internal or external, the transfer price in cooperative organizations is determined after the decision to source inside has already been made.

The mandating of transfers is a direct consequence of the vertical integration strategy whereby the large capital investments involved make any other approach impractical. Cooperative organizations measure performance of the total product flow across units, not of units as stand-alone profit centers. The purpose of transfer prices is to accumu-

late total costs as if the end products were manufactured completely within a single business unit.

Actual full cost. When a company transfers actual costs and its units share each other's fortunes, it approaches a pure cooperative type. Actual full costs are calculated by dividing all fixed and variable expenses for a period into the number of units produced. Because product costing involves valuing inventory, allocating joint product costs, and costing by-products, none of which is a precise science, costs are defined and calculated through management judgment and consensus.

The major difficulty with actual full cost transfers is that the price of the intermediate good fluctuates. If either internal or external demand falls and the volume of the selling unit decreases, the transfer price to internal buyers increases. Also, buying units do not know the price until the period is finished and the selling unit can calculate the actual costs.

A multi-billion-dollar chemical company with a sophisticated management control system used actual full-cost transfer prices. (Actual full cost is not the chosen method of only the unsophisticated.) In this company, buying divisions were told which plant to purchase from. Top management made these complex sourcing decisions to minimize transportation costs and to balance plant loadings for greatest manufacturing efficiency.

Because product costs varied according to the producing plant, some managers were unhappy with this approach. Overall, however, managers showed little desire to change to standard-cost or market-based transfer prices. The company's controller explained: "The alternatives, such as using market-based pricing or keeping track of who gets favorable and unfavorable variances, are worse than what we have. Financial information is important but it doesn't give managers yes or no decisions. We still pay them to run the business."

Performance measurement, evaluation, and reward at this company were consistent with the actual-cost transfer pricing policy in that they emphasized the business unit's contribution to the company rather than its own financial results. Subjective judgment played a large role in evaluating a business unit manager. Company performance, business unit performance, and especially personal performance determined bonuses.

Standard full cost. If a company uses standard full-cost transfers, it can substantially reduce the variation in price the buying unit receives. This approach makes it possible to measure more precisely each unit's contribution, especially when variances are charged to the

unit responsible for them. It also makes it possible to more clearly separate the profit-center (external sales) and cost-center (internal transfer) roles of the selling unit. Although nothing can eliminate it, standard full-cost transfers reduce the effect interdependence has on performance measures.

Given the assumptions about volume, raw materials, and other expenses, standard costs are the expected unit costs of producing a product for some period. Standard costs are usually based on what it would cost to produce the good if the plant were running at nearly full capacity. A good standard-cost system attempts to identify the changes in volume or raw material costs that make the actual costs either higher or lower than the standard cost.

A standard-cost system can also isolate the effects the buying unit has on the selling unit, such as when the former buys less than anticipated. Some systems include a "take or pay" provision in internal transfers. When buying units are responsible for negative volume variances if other customers don't turn up, a portion of the selling unit's capacity has to be identified as dedicated to a particular buyer. Disputes can arise about whether a buying unit's capacity was used to meet the demand of another customer.

Determining whether variances are the responsibility of the buying or the selling unit is not easy. When selling unit managers have to interrupt long production runs for special orders, they may complain that the buying units are responsible for the resulting inefficiencies. Buying divisions may argue that because cost decreases such as those for raw materials or utilities are not due to the purchasing acumen of the selling unit but to changes in market prices, the positive variances should be credited to the buying unit.

The integrity of the standard-cost system depends on how the system is designed and operated. At issue is whether managers believe that the standard costs are what the costs really would be for an efficiently run operation. Buying unit managers have to believe that selling unit managers are doing their best to forecast raw material costs accurately. A common complaint is that these estimates are purposefully conservative so that the selling unit can show positive variances.

No ultimate accounting method can solve the problems inherent in standard full-cost transfers. These problems must be managed through processes that recognize the limitations of quantitative measures of performance.

A chemical company in my study illustrates how a standard full-cost transfer pricing policy can be effective even when it does not include take-or-pay

provisions. The company's transfer pricing approach had evolved out of a standard-cost system that had been implemented in the early 1960s. In the mid-1960s, as part of a reorganization to a matrix structure, a task force recommended a market-based system to allocate variances. Top management preferred the standard-cost approach and rejected the team's proposal.

At the time, the CEO explained his reasons this way: "I can tell how well the entire company is doing based on the performance of a few of our key chemicals. But in order to do this, I need to see all of the variances in one place, not scattered across 50 to 60 downstream products."

Twenty years after the implementation of standard-cost transfer prices the sentiment is pretty much the same. One manager acknowledges that market-based transfer prices would have some advantages: "There is a lot of merit to a market-price system. It shows on one accounting document the relative contributions to profits of the individual products. If we were to evaluate on this basis we would have to have a better way of showing the products' contributions."

In this company, however, relative profitability doesn't count for much. Managers are evaluated on the basis of their contribution to the company in ways other than the profitability of their business units.

The company is located in a small town; nearly all of its managers are chemists and chemical engineers who were recruited right out of college and promoted within the company. They know each other well and have an intimate understanding of the company's businesses and strategy, which have been constant for years. One senior executive explained how managers are assessed: "They are measured on profit before taxes, but we evaluate them more based on the quality of their effort. It is a largely subjective judgment and includes a poll of their colleagues." Bonuses are based on total corporate performance and on an individual's performance appraisal—not unit results. One manager explained this shared-fate concept of fairness: "Our objective is total corporate profits. I can make a decision that costs my division money, but if it makes the company money, I'll be okay. It's an inherent philosophical and intellectual thing. We react to overall optimization."

Cost plus investment. Even when managers mostly agree about what fair standard costs and variance allocations are, the standard full-cost method still causes problems. The selling unit does not receive a profit on internal transfers, resulting in lower profit margins and return on investment percentages.

Even though top management does not attach much meaning to unit comparisons of net profit and ROI, some selling unit managers may feel that some of "their" profits are showing up in the performance measures of buying units.

One solution to this and other problems is to use a cost-plus-investment method for establishing the transfer price while retaining mandated internal sourcing. Several chemical companies, an electronics company, and a heavy machinery company in my study used this approach at some point. This method transfers the intermediate good on a full-cost basis, but it also "transfers" the portion of the selling unit's assets used for internal needs to the books of the buying unit. This approach essentially splits up the selling unit into an investment center based on external sales only and a cost center for internal transfers, and makes the buying unit responsible for profits and ROI on all internal resources used to manufacture its products.

Cost plus investment plays a function in cooperative companies similar to the one that dual pricing plays in competitive organizations. In both cases the objective is to obtain some of the advantages of the other organizational type. But whereas dual pricing accomplishes this by using both of the two basic approaches, cost-plus-investment pricing is a financial technique that "eliminates" the structural arrangement that requires a transfer in the first place.

Cost-plus-investment transfer pricing also has its problems, many of which are related to allocating costs and investments. As conditions change, allocations, which are inevitably somewhat arbitrary, may not fairly reflect the balance between internal and external sales.

One company took nearly three years to make a cost-plus-investment approach work, and even then some key managers remained vehemently opposed to it. The problems included a selling unit manager who wanted his unit to remain a profit center and so purposely set standard costs that would result in a positive variance; a take-or-pay provision combined with spot market-price transfer prices on products desired in excess of budget; disagreements about which unit should benefit from purchasing and energy variances; and some buying unit managers who felt that some of the selling units' plant investments were excessive.

...in Collaborative Organizations

Companies that are *collaborative* emphasize both the interdependence of vertical integration and the independent contributions of the business units as diversified businesses. They combine characteristics

of both competitive and cooperative organizations. As individual profit centers, the units compete; but as a result of high interdependence, they must cooperate. The inherent tension in this situation makes it possible for companies to obtain the benefits of the cooperative and competitive types but also makes them vulnerable to their problems. For collaborative organizations, the transfer pricing problem is most complex.

It is not clear on the MAP where an organization passes from competitive to collaborative or from cooperative to collaborative. As an organization moves toward the collaborative area—either through changes in transfer pricing policies or through increased strategic emphasis on interdependence through vertical integration or on independence through diversification—the transfer pricing problem becomes more difficult to manage. As this occurs, management processes become increasingly important in designing the transfer pricing policy.

In collaborative organizations the interplay of top-down and bottom-up planning approaches establishes strategy. As the balance between the objectives of the units working together and their individual objectives changes with conditions, the corporate strategy shifts.

Collaborative organizations are usually organized as matrix structures or as multidivisional structures that are substantially interdependent. Business units might share such resources as corporate manufacturing or sales units. The structures of collaborative organizations are more complicated and messier than the clean multidivisional form of the competitive organization or the clean functional form of the cooperative organization. Supporting the diversification dimension of strategy are the results-oriented systems of the competitive type for top management control, while the hierarchical structure of the cooperative organization gives top management control in support of the interdependent vertical integration dimension of strategy.

Because of the tension between structure and systems in collaborative organizations, the primary mechanism of control is through management processes. This is a higher order form of control than in either of the other types. Top management must constantly guard against an excessive use of the functional structure or of the business unit systems; either can lead to the deterioration of the dimension of strategy associated with the other control mechanism.

The management processes shaping corporate-business unit relationships are iterative in nature. They combine both the bottom-up processes of the competitive type and the top-down processes of the

cooperative type. Similarly, the processes shaping inter-business-unit relationships are those of mixed-mode bargaining. These processes combine distributive bargaining of the competitive type with integrative bargaining of the cooperative type. Iterative and mixed-mode bargaining processes are complex and require that the managers involved have sophisticated conflict resolution skills. They also increase stress, which, if excessive, can hurt performance.

Iterative processes are used in strategic planning: guidelines are issued from the top down; the units then communicate up in such a way that alters the top level's definition of strategy. Iterative processes make possible shifts of influence and control between levels and units as circumstances dictate.

Mixed-mode bargaining processes between business units are a consequence of their simultaneously competitive and cooperative relationships. Due to the emphasis on systems for measuring quantitative results, business units have an incentive to win at the expense of others. Structural interdependence, however, acts as an incentive for each business unit to be concerned with the performance of the other as it affects total corporate results.

The dual focus that exists in measuring, evaluating, and rewarding performance reflects the mixed-mode bargaining. On the one hand, collaborative organizations use largely quantitative, objective criteria to assess individual business unit performance and to reward this performance. Executives take great efforts to establish objectives that contain measures of profitability and return on investment and to compare performance along these dimensions with similar external competitors.

On the other hand, given the very real dangers of managers attempting to improve unit performance at the expense of total corporate performance and the difficulty of finding comparable outside competitors, management tempers the quantitative approach with internal criteria such as cost-efficiency, total product performance, and other, more subjective, assessments. Bonuses for managers and capital budgets for units take into account both independent and interdependent contributions in a necessarily difficult-to-define combination of cooperative and competitive criteria.

The sense of fairness in collaborative organizations is based on a rational trust the unit managers have in top management. The rational component signifies the impartial spectator standards of fairness appropriate for competitive organizations. The trust component signifies the shared-fate standards of fairness appropriate for cooperative organizations.

Management processes & conflict. In collaborative organizations the required internal sourcing part of the transfer pricing policy of cooperative organizations is combined with the market-based transfer prices (including cost-plus-profit-markup) part of the transfer pricing policy of competitive organizations.

Some companies move from the cooperative to the collaborative area because of increased diversification and a desire to put greater emphasis on individual unit performance. Others want to increase entrepreneurial spirit to prepare for and facilitate increased diversification. In companies that place a large emphasis on decentralized profit responsibility, selling unit managers are not likely to accept the argument that because cost transfers are built into the budget and objectives, they do not distort performance measures. As one manager in this situation put it, "I want to be able to compare my performance with competitors' and internal divisions' so everyone will know what this business is contributing to company profits."

When companies move from the competitive to the collaborative area it may be because they want to increase vertical integration and emphasize internal cooperation and the total product flow.

In collaborative organizations, market-based transfer prices play a different role than do prices in external markets and competitive organizations. In economic theory, price is a single-number transmitter of a great deal of information. Companies allocate resources and make decisions on trading relationships according to this number. Market-based transfer prices play a similar role in competitive organizations. Although they have less impact on capital allocation decisions, they do determine whether a buying unit sources internally or externally.

When top management requires internal sourcing, market-based transfer prices become a source of conflict through which management can gather information and obtain control. The conflict occurs because there is no completely satisfactory way to determine a fair market price. Very large volumes of internal transactions do not have external counterparts, and the specifications of the product sold internally may vary from those of the product sold externally. Both units can argue that the transfer price is not a true market price because changes in transfer prices can significantly affect the performance measures of business units as profit centers and thus perceptions of their relative contributions to company profits.

In making these arguments, the unit managers are likely to present information on roughly comparable external transactions or bids, differences in the cost of product sold internally compared with product

sold externally, lack of cooperation in the relationship (poor R&D and service support or short lead times and canceled orders), inadequate or inflated gross margins, and so forth.

This information gives top management the control it needs to manage the business from a total product flow perspective. It is the kind of information that top managements in cooperative organizations have ready access to because their direct involvement is more accepted. When internal sourcing is required, both units actively seek the involvement of top management to solve the transfer price conflict. Control comes from top management's using each unit to keep the other on its toes.

Conflict is an inevitable element in the iterative and mixed-mode bargaining processes top management uses to exercise control in collaborative organizations. Because it can arise when changes in external conditions put pressures on existing objectives, conflict can warn top management to reexamine strategy. Just as time spent on budgeting and allocating capital is productive to the company, so may be time spent on resolving the conflict related to transfer pricing. Suppressing or alleviating this conflict beyond a certain point actually becomes undesirable. Top management may even want to take steps to increase conflict in order to overcome any reluctance managers may have about bringing disputes—and the attendant information—to the top.

In collaborative organizations, it is impossible to find a transfer pricing policy that will satisfy top management's needs for control and be perceived as fair by the units involved. Indeed, achieving fairness between units would reduce the utility of transfer prices as a mechanism for generating information and control. Nevertheless, to keep business unit managers motivated, management must still try to achieve fairness in *its* relationships with business units. When unit managers perceive that their individual rewards and units' resource allocations are independent of the numbers generated by transfer prices, they'll see the system as fair. It is a mistake to tie individual rewards to individual unit performance, as is done in competitive organizations. As in cooperative organizations, top management must allocate rewards—bonuses, praise, symbols of status, and so forth—subjectively to a certain extent.

A collaborative company's approach. One of the chemical companies in my study provides a perfect illustration of a collaborative organization. One of its major businesses is the largest producer in its industry. Its two largest customers are internal users. All three businesses are critical to the success

of the company. These businesses are capital intensive and their managers accept internal sourcing without question. Transfer prices are market based, less a small discount to reflect the fact that sales effort and other expenses are not required.

The selling unit's product comes in several grades and in several degrees of finish. The largest internal user buys the product in a degree of finish less than for that sold on the outside, which makes finding comparable market prices impossible. The oligopolistic nature of the market for the intermediate good and the extent of vertical integration in the industry also make it difficult to determine a fair market price and an appropriate volume discount, if any.

Disputes about the transfer price of this product have raged off and on for nearly 20 years. Recently, the argument heated up again. The price of the intermediate good rose on the external market and the selling unit general manager set a new transfer price on the good internally. The result was a conflict that generated a series of memos and internal studies providing a great deal of information. In presentations to the president, the buying unit managers reported their performance using both cost- and market-based transfer prices.

The CEO has managed all three of these businesses at different points in his career and understands them very well. When managing these businesses he had shifted to a cost-plus-investment approach because he said he wanted to improve the profits and motivation of the buying units. Others speculated that doing so helped him gain information he needed for capital allocation negotiations. On becoming CEO, he shifted back to a market-based approach for these businesses.

All three managers of these businesses are key members of his management team. They report to group general managers (the selling unit manager to one and the buying unit managers to another) and so are one layer removed from the president. These group general managers are due to retire soon.

The conflict the market-based approach has generated gives the CEO the necessary information and control he needs to be sure that the right balance between vertical integration and diversification is maintained. This is especially important as the company increasingly emphasizes the selling unit's role as an internal supplier over its role as an external supplier. Another strategic concern is the poor performance of one buying unit due to industry conditions. At the time I did the study, the company was about to make a major capital investment to lower this unit's costs and make it more competitive.

None of the managers feels he is being treated unfairly by the chief executive officer. All of them

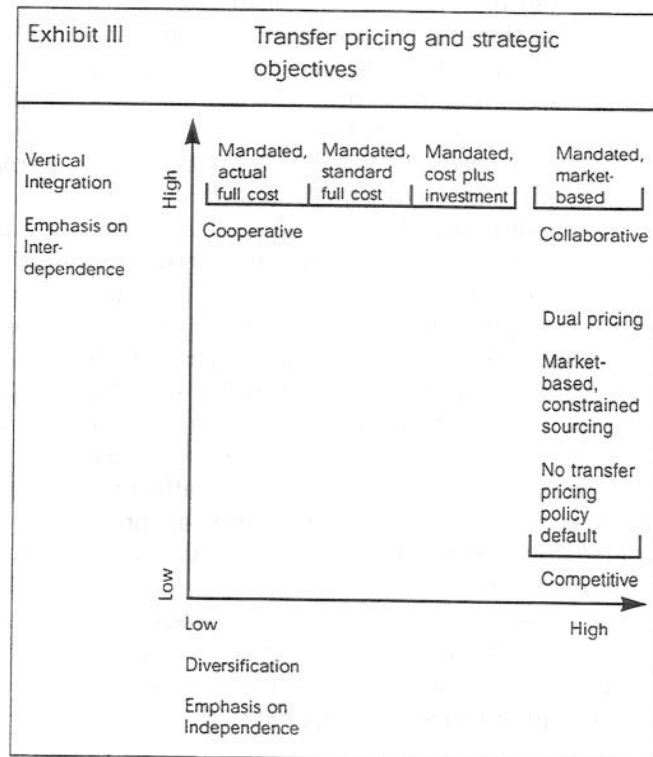
think that he fairly evaluates their performances and that they get the recognition and financial compensation they deserve. They also think that the appropriate capital investments are being made in their businesses.

The CEO has made special efforts to let managers know that he recognizes their individual contributions to the company. What's more, his word carries weight because he receives much information and also has a deep understanding of all three businesses. Because the company is placing more emphasis on measuring unit profitability and return on investment, the CEO's knowledge and judgment are especially reassuring to the unit managers.

Managers feared that others in the company who lack the president's depth of understanding would underestimate the contributions their businesses make; such feelings of unfairness were directed toward each other. Perceptions of unfairness go far beyond mere financial compensation to include pride, concern with others in the unit, and personal values about what is just. In this company these feelings were exacerbated by the distrust that existed between the managers of the buying and selling units due to differences in personal style.

Using the MAP

Managers can use the MAP, which associates organizational characteristics (including transfer pricing policies) appropriate for various combinations of the two strategic dimensions, to analyze their existing



transfer pricing policies. This analysis takes five steps, each of which requires substantial managerial judgment to complete. Because the strategic relationships between business units vis-à-vis vertical integration and diversification depend on the business units involved, this analysis is best performed on a product (or group of similar products) basis.

Step 1: Locate inter-business-unit relationships on the MAP. Define measures of diversification and vertical integration appropriate to the company. Place inter-business-unit relationships on the MAP according to strategies of business units and strategy for their relationship.

Step 2: Compare location to existing transfer pricing policy. Determine what transfer pricing policy is most appropriate according to *Exhibit III*. The exhibit summarizes the transfer pricing policies appropriate for varying degrees of emphasis on interdependence through vertical integration and independence through diversification. Compare to existing transfer pricing policy, and consider a change in either the strategy or the pricing policy if there isn't a fit.

Step 3: Analyze organizational characteristics. Determine which organizational characteristics from competitive, cooperative, or collaborative types (*Exhibit II*) are most appropriate given the corporate strategy. Compare to existing organizational characteristics; consider making some changes in organizational characteristics if there isn't a fit.

Step 4: Look for special problems. If strategy, transfer pricing policy, and organizational characteristics are consistent but managers still complain, they may do so because of one of the five special problems noted in the next section. Resolution of the conflict will depend on its underlying source and will have little to do with transfer pricing.

Step 5: Consider future strategy. Anticipate that changes in strategy may require changes in transfer pricing policy. Make a decision about the timing of this change. A change in transfer pricing policy prior to a change in strategy may signal and facilitate this new strategy, but expect and accept problems during the transition. Or a change in policy may occur after the new strategy is in place; the inevitable problems that will result as the old policy becomes increasingly inappropriate for the new strategy can help spur the change.

While providing a useful framework for thinking about transfer pricing, the MAP must be supplemented by management judgment. For example, the MAP enables a manager to determine if conflict is useful, as it is in collaborative organizations, or not,

as is more likely in competitive or cooperative organizations. But by itself the MAP does not enable a manager to determine if the conflict is a result of other factors having little to do with transfer pricing.

Common Transfer Pricing Problems

Even if the company has a transfer pricing policy appropriate for its strategy, five common problems can lead to conflict. Here, too, management processes are far more important than any attempt to find technical solutions.

1. Performance problems. When either unit is having trouble meeting its profit objectives, changing the transfer price is one of the easiest fixes for the bottom line. If both businesses are doing poorly, as in times of recession, conflict will be especially severe, but at these times no change in the transfer price approach will alleviate the difficulties since the underlying problems are due to external factors that are independent of the transfer price.

2. Interpersonal disputes. Disputes over transfer prices may simply be the mechanism by which managers act on an interpersonal conflict unrelated to transfer prices. Arguing over transfer prices seems a more legitimate way of conducting this dispute than name-calling. The interpersonal and the substantive issues can get confused.

3. Power imbalance. A unit manager who feels there is a power imbalance due to his greater dependency on the other unit (such as when a buying unit sources a product internally that is a significant part of his cost of goods sold but in amounts insignificant to the selling unit) may initiate conflict to try to correct this imbalance.

4. Demand fluctuation. When demand for the intermediate good is high, the buying unit is glad to have assured supplies on a full-cost basis that will be much below market price. This is precisely the time, however, when external customers are especially attractive to the selling unit. The reverse situation occurs when demand for the intermediate good is low and outside suppliers are willing to sell at market prices below full cost.

5. Product pricing. A complaint about market-based transfer prices is that the final good's price becomes uncompetitive. The response to this is that because external suppliers of the intermediate good would receive a profit, profit should be earned at each stage of the production process. A complaint about cost-based transfer prices is that the final good will not be priced aggressively enough, resulting in lost profits or pursuit of market share at the expense of profitability. The response to this is either that

vertically integrated competitors supply the intermediate good on a cost basis or that external suppliers have lower cost structures due to specialization and lower overhead and can make a profit at a lower price than would be required for internal transfers. In both of these cases, the problem requires recognition that product pricing involves issues other than cost. It is a complex problem in and of itself, and its analysis includes estimates of customer value and competitors' prices in addition to costs set up by transfer prices.

Although no simple solution to the transfer pricing problem exists, it can be effectively managed. The ability to do so rests on recognizing that the nature of the transfer pricing problem varies according to a company's (group's, unit's, or product's) location on the MAP and the direction in which management wishes to move. Effective management of transfer pricing requires policies and organizational characteristics that are consistent with strategy. Appropriate processes are essential for achieving the desired objectives of fairness and control.

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2. They also show only limited use of variable cost. See Richard F. Vancil, *Decentralization Managerial Ambiguity by Design* (Homewood, Ill.: Dow Jones-Irwin, 1979); Roger Y. Tang, *Transfer Pricing Practices in the United States and Japan* (New York: Praeger, 1979), and Roger K. Mautz, *Financial Reporting by Diversified Companies* (New York: Financial Executives Research Foundation, 1968).
3. The view of corporate strategy used here is taken from Kenneth R. Andrews, *The Concept of Corporate Strategy*, 2d ed. (Homewood, Ill.: Richard D. Irwin, 1980).
4. An often used classification of diversification strategy that essentially combines a specialization ratio and a relatedness ratio and a single dimension is that of Richard P. Rumelt, *Strategy, Structure, and Economic Performance* (Boston: Division of Research, Harvard Business School, 1974).
5. Although in theory division general managers are autonomous and have the authority to control their own destinies, a study of nearly 300 companies found that profit center managers' responsibility nearly always exceeds their authority. For fuller discussion of these concepts, see Richard E. Vancil, "What Kind of Management Control Do You Need?" HBR March-April 1973, p. 75.
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7. For a discussion of how capital investment decisions are actually made, see Joseph L. Bower, *Managing the Resource Allocation Process* (Boston: Division of Research, Harvard Business School, 1970).
8. For further discussion of the product pricing problem, see E. Raymond Corey, *Industrial Marketing: Cases and Concepts*, 3d ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1983); Benson P. Shapiro and Barbara B. Jackson, "Industrial Pricing to Meet Customer Needs," HBR November-December 1978, p. 119, and Frederick E. Webster, Jr., *Industrial Marketing Strategy* (New York: John Wiley & Sons, 1979).



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Siemens Electric Motor Works (A) and (B) Combined

Process Oriented Costing

Without PROKASTA our new strategy would have failed. With the information generated by the process oriented cost system we can identify orders we want to accept. While some orders we lose to competitors, most we turn down because they are not profitable. Anyone who wants to understand the importance of PROKASTA to EMW simply has to look at the costs of some typical orders under the traditional system and PROKASTA.

Mr. Karl-Heinz Lottes - Director of Business Operations, EMW

Siemens Corporation

Headquartered in Munich, Siemens AG, a producer of electrical and electronic products, was one of the world's largest corporations. Revenues totaled 51 billion deutschmarks in 1987, with roughly half this amount representing sales outside the Federal Republic of Germany. The Siemens organization was split into seven major groups and five corporate divisions, as illustrated in Exhibit 1. The largest group, Energy and Automation accounted for 24% of total revenues, and was itself comprised of seven divisions. Low wattage alternating current (A/C) motors were produced at the Electric Motor Works (EMW), which was part of the Manufacturing Industries Division of the Energy and Automation Group.

The production facilities of the Manufacturing Industries Group were organized by production technology. For example, low wattage A/C motors and high wattage A/C motors were produced in different facilities, because they required different production technologies. The Sales Division was organized by customer market segments. There were twelve sales branches located throughout Germany and Europe. None were co-located with a production facility. All A/C motors produced by EMW were sold exclusively through the Sales division. Both EMW and the Sales Division of the Manufac-

This case was prepared by Professor Karen H. Wruck and Professor Robin Cooper, Harvard Business School, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

turing Industries Group were profit centers.

The Electric Motor Works

Located in the small town of Bad Neustadt, the original Siemens EMW plant was built in 1937 to manufacture refrigerator motors for "Volkskuhlschraenke" (people's refrigerators). Less than a year later, Herr von Siemens decided to halt production of refrigerator motors and began to produce electric motors for other applications. At the end of World War II, the Bad Neustadt plant was the only Siemens factory in West Germany capable of producing electric motors. All the other Siemens production facilities had been completely destroyed or seized by Eastern Bloc countries. After an aggressive rebuilding program, Bad Neustadt emerged as the firm's primary producer of electric motors.

The A/C motor business was cyclical and highly dependent on the machine tool industry. From 1977 to 1987 EMW averaged 80% capacity utilization. Sales ranged from DM334.4 million to DM499.1 million (see Exhibit 2). Production volume also varied widely: in 1983 volume was 350,600 motors and in 1987 volume was 630,000.

Through the 1970's EMW produced about 200 different types of standard motors, at a total annual volume around 230,000 motors. Standard motors accounted for 80% of sales volume - the remaining 20% was customized motors. The production process was characterized by relatively long runs of a single type of motor. Because identical motors were used by a wide range of customers, standard motors were inventoried and shipped as orders were received. Production of standard A/C motors was extremely competitive. The key to success was to reduce costs so that the firm could price aggressively while making a profit. Despite a major expansion and automation program begun in 1974, by the early 1980's it became obvious that the lower labor rates of the Eastern Bloc competitors gave them an insurmountable cost advantage. Lottes describes the situation:

Ten years ago our electric motor business was in real trouble. The Eastern Bloc countries were selling motors at prices we were unable to match. We were the high cost producer in our industry. We decided to change our strategy and focus on producing custom motors to order.

Changes in Strategy

An extensive study of EMW's production capabilities and the market for electric motors indicated that EMW was in a position to become a profitable producer of low volume, customized A/C motors. To help implement this strategy, the Bad Neustadt plant was enlarged and dedicated to the manufacture of A/C motors with power ratings ranging from 0.06 to 18.5 kilowatts. These motors supported a number of applications including automation engineering, machine tools, plastic processing, and paper and printing machines. Exhibit 3 presents a detailed program of an A/C motor and shows one standard and one customized version of three motors.

Adopting this new strategy required the ability to efficiently

manufacture many more types of motors in smaller production runs. Between 1985 and 1988 EMW spent DM50 million a year on its production facilities. By replacing almost every machine on the shop floor EMW created a production environment that supported its new strategy.

As a result of the capital expenditures program, by 1987 the production process was highly automated. Numerically controlled machines, flexible machining centers and robotically fed production processes were used throughout the factory. Large volume common components were manufactured using the appropriate automated equipment, while very low volume components might be made by hand. Where possible flexible manufacturing was used to produce small volume specialty components. While normal annual production volume for common components might be 100,000 units, a single component could have up to 10,000 custom variations which might have to be produced one at a time.

To design a custom motor, modifications were made to a standard motor design. The process involved determining where standard components could not be used. These standard components were replaced by custom components that provided the functionality required by the customer.

In 1987, 65,625 orders were accepted. Of these orders, 90% were for custom motors. A total of 630,000 motors were produced. Including all customized variations, Siemens EMW produced about 10,000 unique products and 30,000 different types of special components.

Change in the Calculation of Production Costs

Beginning in 1926, EMW had used a cost system to calculate product costs. This system assigned material and labor costs directly to the products and divided overhead costs into three categories: material related, production related, and support related overhead. Material related overhead contained costs associated with material acquisition and was allocated based on DMs of direct materials consumed by a product. Production related overhead was directly traced into costs pools and allocated to products using either direct labor hours or machine hours, but not both. For more manually intensive machine classes direct labor hours was used. For machines whose operation required few direct labor hours, machine hours was used. In 1987, EMW used 600 cost pools, one per machine class. Support related overhead was allocated to products based on the sum of direct material and direct labor costs, material overhead, and production overhead. The breakdown of each cost category as a percent of total costs was as follows:

	<u>Percent of Total Costs</u>	<u>Burden Rate</u>
Direct Material	29%	
Direct Labor	10%	
Materials Overhead	2%	6% of material cost
Production Overhead	33%	
Support Related Overhead	26%	35% of Pre-Support manufacturing cost

Two years after the change in strategy, problems with the traditional cost system became apparent. Management's concern with the traditional cost system was its inability to capture the relation between the increased support costs and the change in product mix. Under the traditional system support costs were allocated to each motor based on its consumption of direct materials, direct labor and either direct labor hours or machine hours. Management felt that the support costs were more closely related to the number of orders received and the number of customized components required.

As shown in Exhibit 4, 74% of the orders accepted for production by EMW after the change in strategy were for less than five motors. This simultaneous increase in the number of orders and reduction in the number of motors per order, increased the load on the production support departments. An analysis of the way work was generated by orders in the shipping and handling, order processing, technical analysis of incoming orders, billing, and product costing departments, indicated that the same resources were required to process an order of one custom motor as an order of 100 standard motors.

The increase in the number of products with special options similarly caused the production scheduling, purchasing, packaging, product development and design departments to expand. An analysis of the way work was generated by special components in these departments indicated that it was not the number of special components produced, but the number of different types of special components in each motor design that determined the work load. For example, processing an order of 50 custom motors with a design requiring 10 special components per unit generated the same amount of work as processing an order of 1 custom motor also requiring 10 special components. For each order, ten special components had to be processed, making a total of 20 special components processed. In 1987, EMW produced 65,625 orders. The motor designs produced to fill these orders required that the 30,000 different types of special components be processed 325,000 times. In total, over a million units of special components were produced in 1987.

An extensive study was undertaken to identify the support costs that management believed were driven by processing orders and processing special components. Part of each of the following departments' costs were allocated to two new overhead cost pools.

Costs Related to Order Processing

- Billing
- Order Receiving
- Product Costing and Bidding
- Shipping

Costs Related to Special Components

- Inventory Handling
- Product Costing and Bidding
- Product Development

Purchasing
Receiving
Scheduling and Production Control
Technical Examination of Incoming Orders

Once these costs were identified they were removed from the support related cost pool and assigned to two new cost pools. Exhibit 5 illustrates the formation of the two process oriented cost pools for 1987. The first column presents total costs grouped by traditional costing system definitions. To move to process oriented costing (PROKASTA¹), DM6.3 million was removed from the engineering costs, and DM27 million from administrative costs. These DM33.3 million of costs were then assigned to the new cost pools: DM13.8 million to order processing costs, and DM19.5 million to special components costs.

With process oriented costing, the cost of the base motor from which the customized product was derived and the cost of each custom component was calculated using the traditional cost system but with the smaller support related cost pool (see Exhibit 6). This was called the pre-PROKASTA unit cost. The PROKASTA cost elements were then added.

In 1987 EMW received close to DM1 billion in orders, but accepted only DM450 million. Production volume ran at 115% of rated capacity. The product cost information generated by the PROKASTA system played an integral role in helping EMW managers determine which orders were profitable and which were unprofitable. The PROKASTA system was also used to determine the price at which motors were transferred from EMW to the Sales Division.

Transfer Pricing

The Sales Division received orders for A/C motors directly from the customer. Each order was accepted or rejected based on an evaluation that brought together representatives from both Sales and EMW. In the process of evaluating orders the EMW representative provided data on the cost of production, while the Sales Division representative provided customer information. Transfer pricing rules were established to determine the price Sales would pay to EMW for producing a particular order. The transfer price was based on EMW's estimated cost of producing an order and Sales' estimate of the price the customer was willing to pay.

Cost of Producing an Order

Using the PROKASTA system, EMW supplied the Sales Division with the standard cost of one unit for each order under consideration. Sales estimated the cost of an order by taking this standard cost and applying a discount factor based on the number of units ordered. The resulting price per unit was called the factory cost. When the Process Oriented System was first implemented, EMW considered providing Sales with a complete standard cost schedule for each order. Sales protested that the number of reports would be cumbersome and suggested that EMW develop some simpler method to

¹PROKASTA is an abbreviation for PROzessorientierte Kalkulation fuer STAffelkosten, which translated means Process Oriented Calculation for Cost Schedule.

determine the factory cost. As a result one aggregate schedule was used for all low wattage A/C motors. For 1987, the following schedule was used to determine the factory cost:

**Factory Cost Schedule
Low Wattage A/C Motors**

<u>Number of Pieces per Order</u>	<u>Discount Factor</u>
1	1.00
2-4	.79
5-19	.57
20-99	.48
> 100	.42

The factory cost schedule is illustrated by the step function in Exhibit 7 and was designed to approximate process oriented unit costs across the whole range of low wattage A/C motors. However, there were differences between the two. For example, as illustrated in Exhibit 7, for a typical motor, when between 14 and 19 units were ordered, the factory cost was greater than the process oriented unit cost.

Using the above schedule, Sales could determine the factory cost for a particular order by taking the factory cost of a single unit and adjusting for the volume ordered. For example, motors from an order of 12 with a standard one unit cost of DM250 were costed at DM142.5 per unit ($DM250 \times .57 = DM142.5$).

Computing the Transfer Price

The price at which EMW transferred motors to the Sales Division was determined by first analyzing whether the order was profitable. For profitable orders, the transfer price was set at factory cost plus 1/3 of the profits earned (see Exhibit 8A). If the order was unprofitable, the transfer price was set at variable cost plus 3/4 of the contribution earned (see Exhibit 8B).

These transfer pricing rules were developed based upon historical data and designed so that over the entire business cycle, EMW broke even. Under this system EMW had averaged zero profits over the last 5 years. In a good year, EMW would report small profits (maximum reported profit of DM5 million) and in a bad year losses (maximum reported loss of DM10 million). The two transfer pricing rules were established by analyzing the cost structure of the low wattage A/C motor business at average capacity utilization over the business cycle. The average capacity utilization was 80%, and at this capacity the A/C motor business as a whole required a 40% contribution to break even. Under the assumption of a 40% contribution, if 3/4 of this contribution was given to EMW, it would break even as a separate unit. The remaining 1/4 of the contribution, if given to sales, would allow sales to break even. Hence, the transfer pricing rule for unprofitable orders was set at variable cost plus 3/4 of the contribution. After dividing the contribution from unprofitable orders in an average year between EMW and sales in a 3 to 1 ratio, the profit from the remaining orders was divided so that EMW broke even. Break even performance was achieved by setting the

transfer price for profitable orders at factory cost plus 1/3 of the profit.

Evaluating Orders

The Sales Division determined the preliminary price of an order using a catalogue of list prices for motors and special components. When a customer ordered motors that EMW had produced before, the price was simply looked up in the catalogue. Generally, catalogue prices were the one unit standard cost plus a mark-up. When a customer ordered motors that EMW had not produced before, a price was calculated by finding the list price of a similar motor and then adding and/or subtracting the list price of special components.

Major tooling was sometimes necessary when the motors ordered were substantially different from any motor EMW had produced before. EMW estimated these costs and the customer paid for the tooling before production began. On average, tooling costs ran about DM100,000, and customers only found it worthwhile to pay these costs for large volume orders. Once EMW had tooled for the production of a new motor, it could produce almost 30,000 variations of that motor with almost no additional tooling cost.

Orders where the sale price was greater than the factory cost were considered routine. The regional sales office negotiated price and delivery directly with EMW. Special consideration was given to orders where the sale price was less than the factory cost. In 1987 about 9% of accepted orders fell into this class. A distribution of these orders by number of units ordered is presented in Exhibit 9. These orders were forwarded to the central sales office in Erlangen, and the order was accepted or rejected based on negotiations between central sales and EMW. A number of factors came into play in these negotiations. Records of past sales were examined to check the price at which similar motors had been sold. In addition, the profitability of the customer's total business with Siemens Corporation was analyzed. A record was kept of each client's transactions with all divisions of Siemens' Manufacturing Industries Group. In 1987, there were over 4,000 such clients. For profitable customers, central sales could quote a lower price, expecting to make up this loss on other business with that customer.

Customers with large volume orders generally got bids from several firms before choosing a producer. The European market for custom A/C motors was dominated by three large producers. Siemens and one other firm produced primarily custom motors. The third firm produced predominantly standard motors. In addition, a number of very small firms produced custom A/C motors. For a good customer, central sales would match the low bid even though it was less than the cost of production. In 1987, 87% of EMW's orders for more than 100 motors were sold below full cost (see Exhibit 9). Sometimes a good customer ordered a small number of complex motors and expected special treatment. A below cost price would be accepted if the loss could be made up in other transactions with the customer. For all unprofitable orders, however, a price floor was set at 25% above the variable cost of production.

As noted earlier, over DM1 billion in orders were evaluated in 1987. Of these, only DM450 million went into production. Some orders were lost to competitors, but most were not accepted because they were judged to

margin. The low volume orders were by far the most profitable for the firm, as illustrated in Exhibit 10. In 1987 orders for less than five motors had an average contribution margin close to 50%. Orders for more than 100 motors had less than a 20% contribution margin.

Mid 1988

By mid 1988, a potential problem with EMW's performance had surfaced. Even though it was operating at 115% of rated capacity, EMW reported a substantial loss for the first half of the year. Lottes was concerned because if EMW was not profitable at its current operating capacity, it was not clear to him that he would be able to break-even over the business cycle. He suspected the problem was with the transfer pricing system, and decided to call his management team together to see if they could diagnose the problem.

Exhibit 1
Siemens Electric Motor Works (A) and (B) Combined
Partial Organization Chart

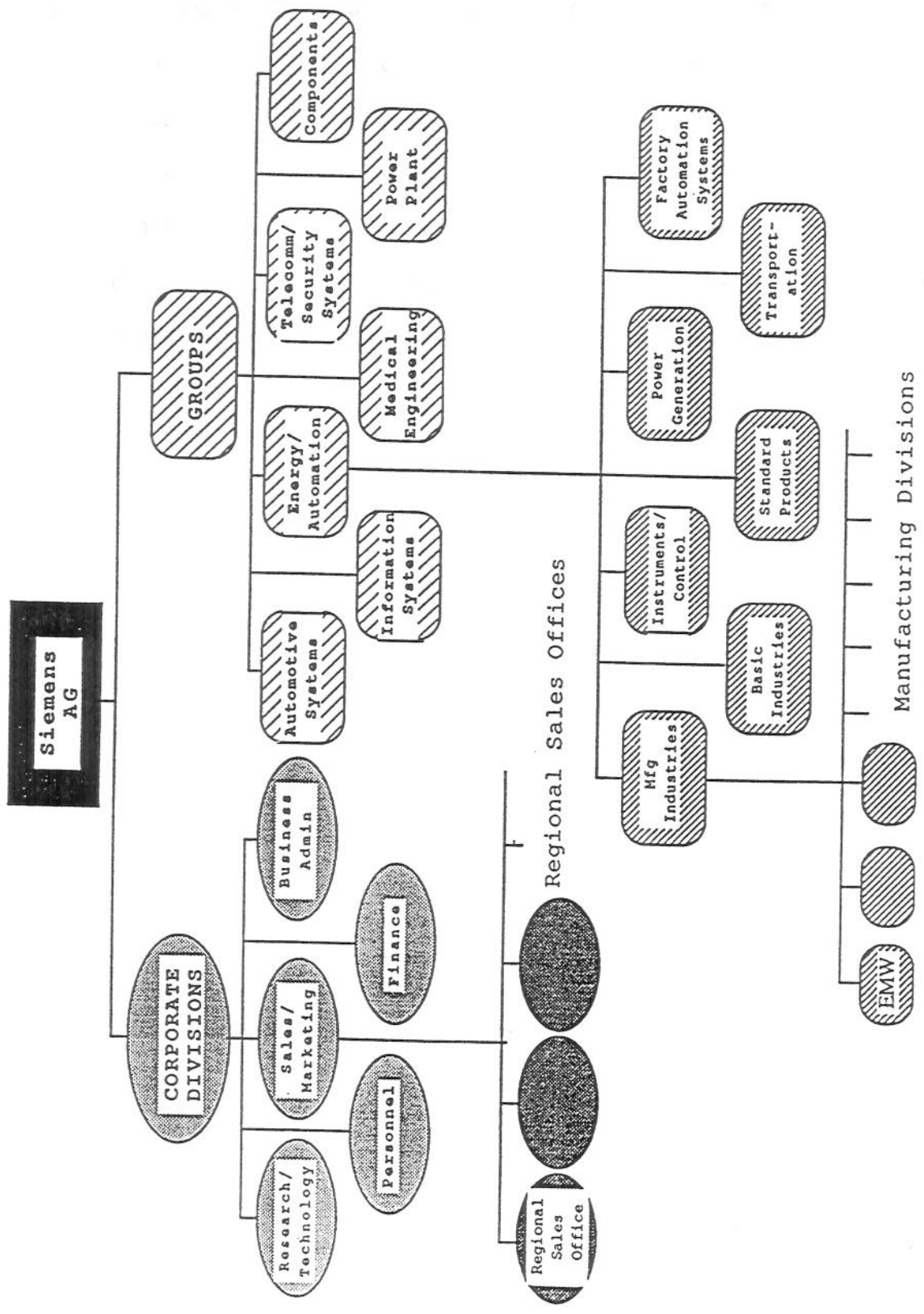
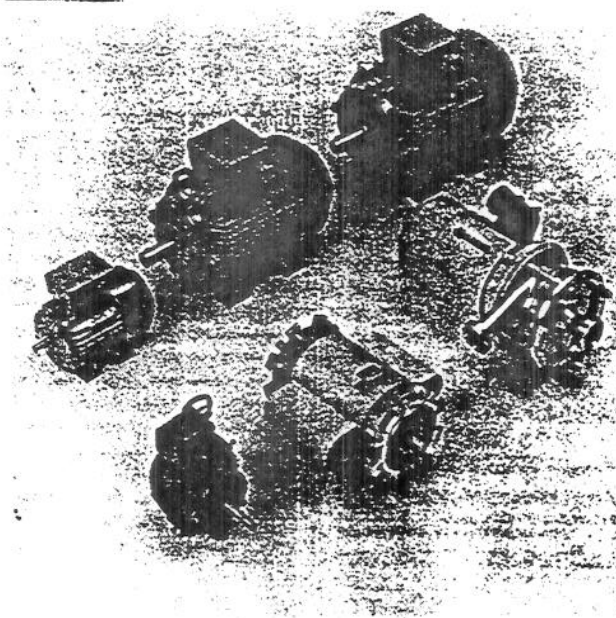


Exhibit 2
Siemens Electric Motor Works (A) and (B) Combined
Orders, Production, and Sales Statistics 1981-1987

	DM Accepted Orders (000,000's)	DM Sales (000,000)	Number of Motors Produced (000's)
81/82	353.6	355.5	403.9
82/83	346.1	334.4	350.6
83/84	420.7	417.0	472.5
84/85	494.6	467.5	518.7
85/86	484.4	499.1	550.0
86/87	442.2	450.1	630.0

Exhibit 3
Siemens Electric Motor Works (A) and (B) Combined
6 Representative Products and a Parts Diagram



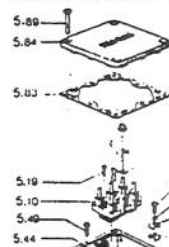
A small part of our large supply program. Above: Three examples of three-phase standard motors; Below: Three custom-built variants.

- ** Teile entfallen bei 1LP5, 1PP5, 1MF5. Bei 1LC5 siehe zugehörige Bremsen-Betriebsanleitung.
- ** 1LP5, 1PP5 und 1MF5: motors do not have these parts. For 1LC5 motors refer to the relevant brake operating instructions.
- ** Certaines pièces sont supprimées pour les types 1LP5, 1PP5, 1MF5. Pour le type 1LC5, voir instructions de service des freins correspondantes.
- ** Piezas suprimidas en 1LP5, 1PP5, 1MF5. Para 1LC5, véase las instrucciones de servicio correspondientes al freno.
- ** Questi pezzi non sono presenti nei 1LP5, 1PP5, 1MF5. Per 1LC5 si vedano le rispettive istruzioni per funzionamento in frenatura.
- ** Detail bortfaller ved 1LP5, 1PP5, 1MF5. Vid 1LC5, se tilhørende driftsinstruktion.

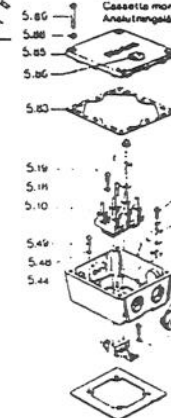
Einleiteranschluss
Single-conductor terminal
Raccordement à un conducteur
Conexión de un solo conductor
Condutture unipolare
Enkeladeranslutning



1LAS, 1LB5, 1LP5, 1PP5
Klemmenkasten in Normalausführung
Terminal box in standard design
Boîte à bornes en exécution normale
Caja de bornes de la ejecución normal
Cassetta montata in esecuzione normale
Anslutningskåda i normal utförande



1MA5, 1MF5
Klemmenkasten in E-Ex-Ausführung
Terminal box in E-Ex design
Boîte à bornes en exécution E-Ex
Caja de bornes de la ejecución E-Ex
Cassetta montata in esecuzione E-Ex
Anslutningskåda i explosionsskyddad utförande



Wahlweise Teilband für Gewinde
Alternatively use
Teflon tape for
thread
En variante, utiliser
un ruban de Teflon
pour le filetage
A elección, cinta de
Teflon para roscas
A scelta, si può anche
impiegare nastro di
Teflon per le filetture
Alternativ Teflon
band i statet för
gånge

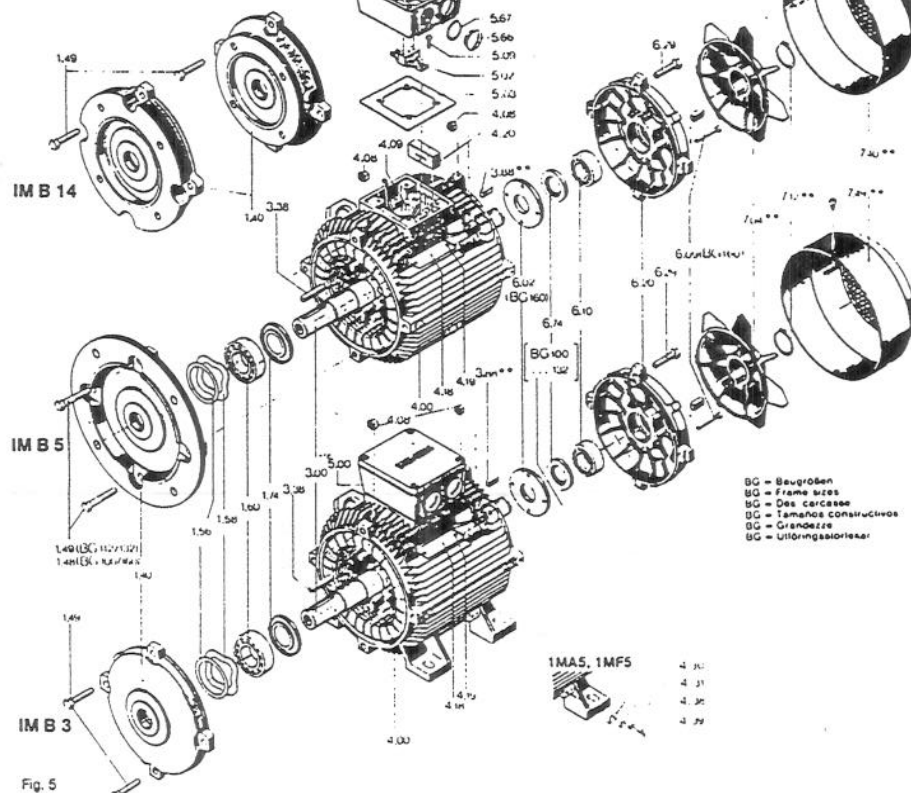


Fig. 5

Exhibit 4
Siemens Electric Motor Works (A) and (B) Combined
Distribution of Orders Accepted for Production in 1987

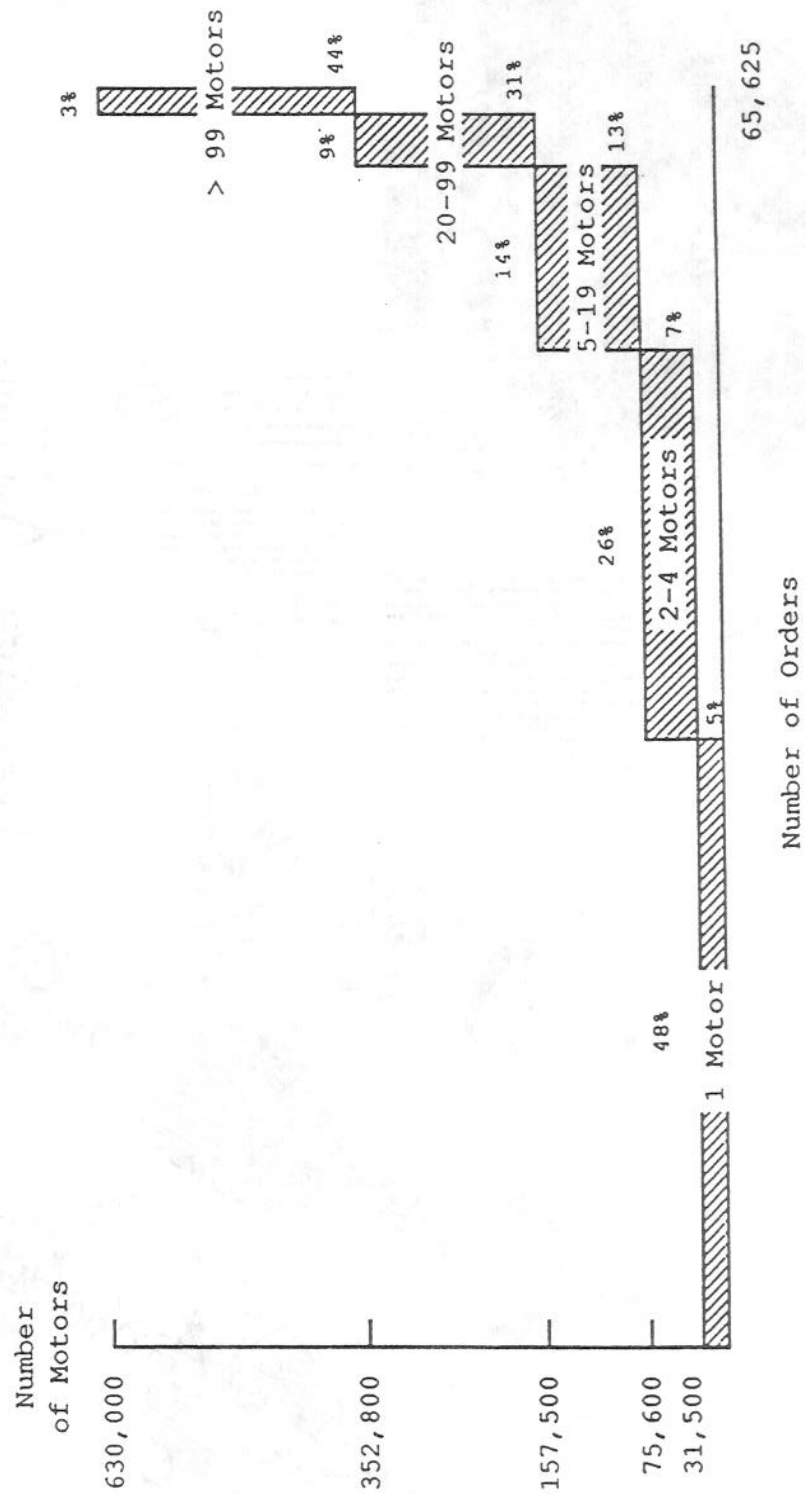


Exhibit 5
Siemens Electric Motors Works (A) and (B) Combined

1987 Reconciliation Traditional Cost System to
Process Oriented Costing System
(000 DM)

	<u>TRADITIONAL</u>	<u>TRANSFERRED</u>	<u>PROCESS ORIENTED</u>
Material	105,000		105,000
Material Overhead	6,000		6,000
Labor	36,000		36,000
Labor or Machine Overhead	120,000		120,000

Manufacturing Cost*	267,000 (74%)		267,000 (74%)

Engineering Costs	12,000	6,300	5,700
Tooling Costs	22,500	0	22,500
Administrative Costs	60,000	27,000	33,000

Support Related Cost*	94,500 (26%)**	33,300 (9%)	61,200 (17%)

Order Processing Cost		13,800	13,800
Special Components Cost		19,500	19,500

Total Cost	<u>361.500</u>	<u>0</u>	<u>361.500</u>

* Percent of Total Cost

** This corresponds to the 26% labeled support related overhead on page 3.

Exhibit 6
Siemens Electric Motor Works (A) and (B) Combined
Pre-PROKASTA Unit Costs for
Five Motor Orders

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Cost of Base Motor (Pre-PROKASTA)	295.0	295.0	295.0	295.0	295.0
Cost of All Special Components* (Pre-PROKASTA)	29.5	59.0	88.5	147.5	295.0
# of Different Types of Special Components per Motor	1	2	3	5	10
# of Motors Ordered	1	1	1	1	1
Cost of Base Motor	Cost of Special Components				
Material 90	Material 9.0				
Material OH 5	Material OH 0.5				
Direct Labor 35	Direct Labor 3.5				
Manufacturing OH <u>110</u>	Manufacturing OH <u>11.0</u>				
240	24.0				
Pre-PROKASTA					
Support Related Overhead <u>55</u>	<u>5.5</u>				
Pre-PROKASTA <u>295</u>	Pre-PROKASTA Cost <u>29.5</u>				

* For illustrative purposes, all different types of special components are assumed to cost 29.5 a piece.

Exhibit 7
Siemens Electric Motor Works (A) and (B) Combined
PROKASTA Discount Factor and Factory Cost Discount Factor

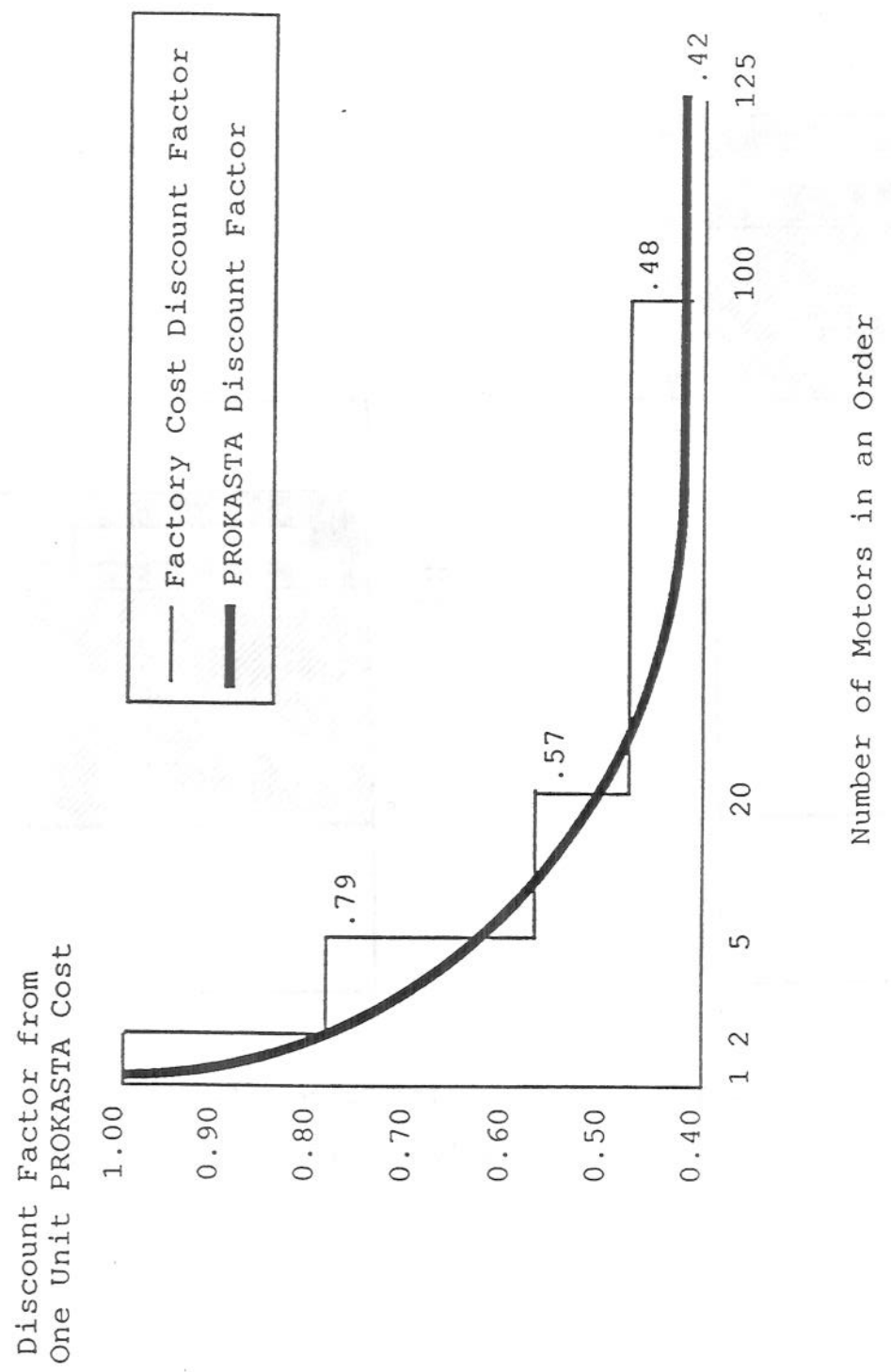
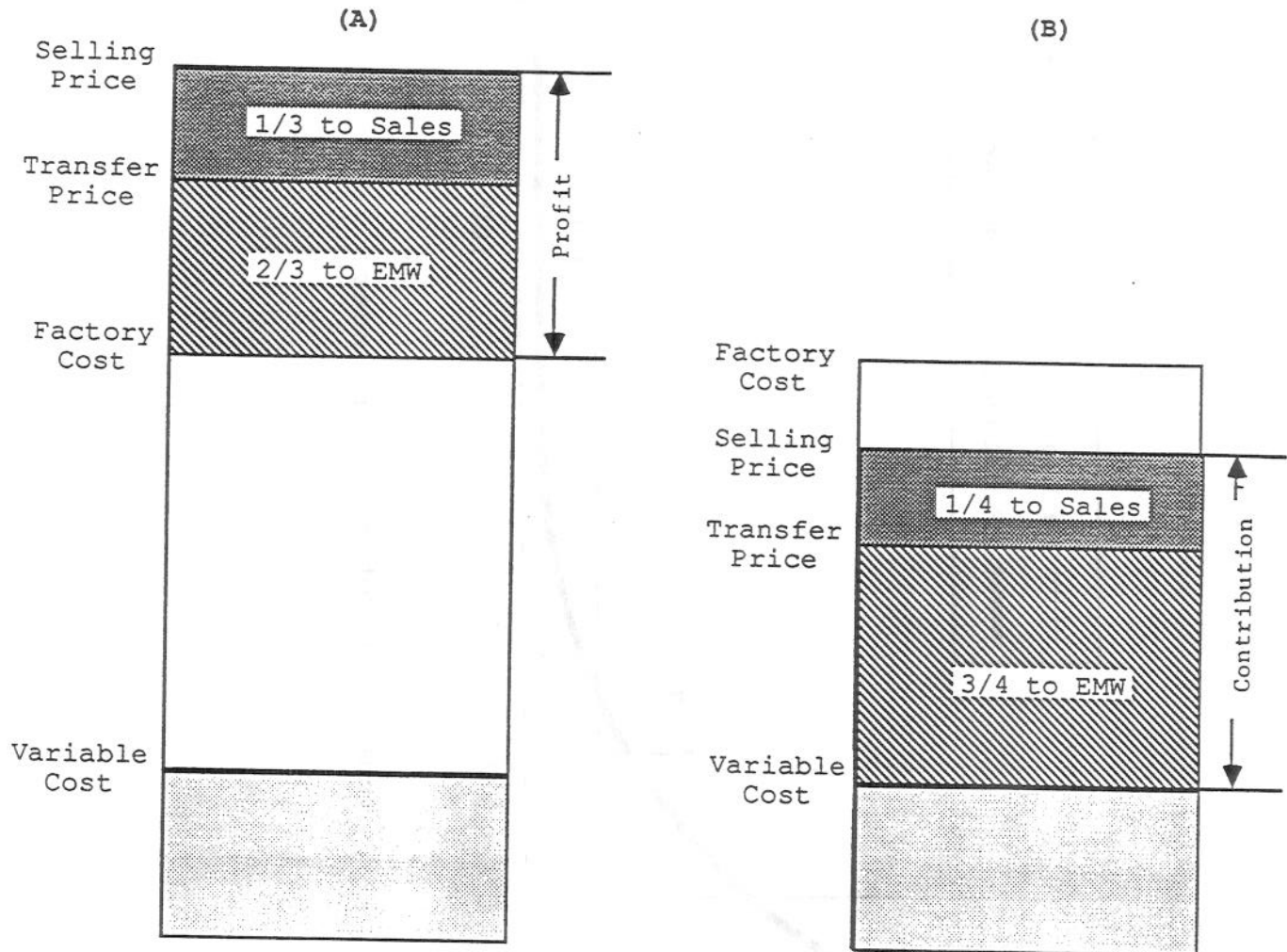


Exhibit 8

Siemens Electric Motor Works (A) and (B) Combined
Transfer Pricing at Siemens

(A) - Transfer Pricing Rule when Selling Price > Factory Cost

(B) - Transfer Pricing Rule when Selling Price < Factory Cost

Exhibit 9
Siemens Electric Motor Works (A) and (B) Combined
Profitability by Order Size for 1987

<u>Number of Motors in Order</u>	<u>Percent of Accepted Orders Where Sale Price < Factory Cost</u>
1	1%
2-4	2%
5-19	2%
20-99	56%
≥100	87%

Exhibit 10

Siemens Electric Motor Works (A) and (B) Combined
 Frequency Distribution of Accepted Orders by Order Size for 1987

<u>Number of Motors in Accepted Orders</u>	<u>% of Accepted Orders</u>	<u>Number of Motors</u>	<u>DM Sales (000,000's)</u>	<u>Contribution Margin</u>
1	48%	31,500	64.35	49%
2-4	26%	44,100	74.25	52%
5-19	14%	81,900	108.00	40%
20-99	9%	195,300	135.00	27%
≥100	<u>3%</u>	<u>277,200</u>	<u>68.40</u>	<u>19%</u>
TOTAL:	100%	630,000	450.00	Overall Contribution Margin 36%



Progressive Corporation

Divisionalization Decision (A)

Assistant Professor Robert G. Eccles prepared this case to serve as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

I've been thinking about divisionalization for about a year. When I see bureaucracy creeping in, I long for the good old days. Divisionalization would help us deal with two issues: what to do with our good people and what to do about bureaucracy. I think divisionalization is a good idea. Now I want to rationalize it. I believe intuitively that if all the people in California were brought together under one leader there would be some gains, but there would also be some losses; we would lose some functional expertise. I think if you have the right guy, you're really giving him the opportunity to do things. I don't see why somebody can't do in California what I did here. That's my dream. It makes sense for people like me. I wonder if there are people who can do it here? We have been hiring people we think can be president of this company. The more you know them, the fewer you think can do it. The guy we pick needs to be tough enough to negotiate with Dick Haverland [president].

Peter B. Lewis, Chairman of the Board
 Progressive Corporation, February 18, 1980

While Lewis would make the ultimate decision on divisionalization, he hoped that a consensus of the 25 officers would emerge on the subject. Toward that end, he scheduled a three-hour officers' meeting (for all those at the assistant vice president level and above) for March 12, 1980, at a local country club to discuss the arguments for and against divisionalization. The discussion was to be followed by cocktails and dinner.

Lewis discussed the timing and implementation of a decision to form divisions: "Maybe a reason to do it now is that we aren't under pressure to do it. We aren't depending on it, so we can easily undo it. I am not convinced that it has to happen now. The questions are what size, what kind of personality, what controls, what delegation?"

As he considered the divisionalization issue and the March 12 meeting he had several questions:

1. Is our business suited to a divisionalized structure?
2. Exactly what form would divisionalization take?
3. Do we have the right people for divisionalization?
4. Should we divisionalize?
5. What would be the proper way to implement such a move?

History

Progressive started in 1937 as a merger of five small Cleveland, Ohio, auto service companies. Joseph M. Lewis and Jack H. Green bought them for \$1,000 when the state threatened to put them out of business for selling insurance without a license. From the start, Progressive provided maps, towing, and other auto-related services to its customers and aggressively sought business in new markets where automobile insurance had traditionally not been sold, or in high-risk segments such as for teenagers.

When Peter Lewis joined the company in 1955, the year he graduated from Princeton, it had grown to \$4.5 million in net premiums and had 40 employees. Lewis bought the company in February 1965, a year in which sales volume reached \$23.5 million. In 1966 management intentionally reduced volume to \$16.5 million by raising premiums; commissions to agents were reduced and employees were laid off. "I learned a lesson," Peter Lewis said. "This trade-off articulated that we will go for profit, not simply for growth. I am much more interested in profit than in growing or making people completely secure in their jobs."

Business improved significantly in 1969, with continued growth through 1973. But the years 1974 and 1975 were the worst in the underwriting history of the property-casualty industry. Management at Progressive responded by reducing the number of employees 17% in April 1974, and by raising prices on certain lines of insurance. In an attempt to build profitable volume, the company introduced some new lines in 1974 and 1975 but lost money on all of them. Diversification guidelines were then set so that (a) the total for all new lines of business would

be no more than 10% of annual volume, and (b) no more than 5% of annual volume would be in any one new line.

At the end of 1975 the company was in a stronger financial position than many of its competitors, with a pared-down organization and its prices at profitable levels. Net premiums written increased from \$37 million in 1975 to \$138.1 million in 1979 (see *Exhibit 1*). During 1979, because of market forces, the growth rate slowed from the 42% of the previous three years to 24%. Although the company's goal had been another year of 42% growth, in retrospect, Peter Lewis saw the slower growth rate as a godsend. "With 42% growth we would be in trouble today. The organization was strained to the limit."

Progressive's Corporate Strategy and Financial Goals

In 1979 *Best's Review* estimated that about \$39.6 billion in net premiums were written in automobile insurance, of which \$29.3 billion was private passenger auto and the rest commercial auto. About 1,100 companies competed in this industry; Progressive Corporation was roughly the ninety-fifth largest.

Progressive's business strategy was based upon sophisticated market segmentation in nonstandard automobile insurance and certain specialty lines. This approach enabled the company to identify smaller, homogeneous groups with particular risk characteristics, to match rates more closely with liability risks and thus to assume the risks that others reject.

For example, consider motorcycles. In 1978, everyone who owned a 450 cc motorcycle paid the same premiums. Then Progressive entered the market with a totally new approach. Our hypothesis was that older drivers are better risks. We set our rates so that we got the 28-year-olds but not the 17-year-olds. It turned out that we were right, and we had better loss ratios. The competition had worse loss ratios and raised their rates. That made our rates look even more attractive and we got more business. Then the competition got wise and copied our program.

We had a second idea. We thought that smaller bikes were a better risk and we set our rates to attract the drivers of smaller bikes. That program was also very successful.

Soon, the competition copied that program and we needed a new idea. Rick Dorman thought of the Big Bike Program. This is a restricted underwriting program for experienced drivers who have a clean record and who park their bikes in a garage. Today, this is one of our most successful products. It is fast growing and very highly profitable. Now one of our competitors has introduced the Large Cycle Program.

The company had a clearly articulated set of financial goals, the dominant one being a return on equity of at least 20%. Since 1965 the company had averaged 25.5%. The second goal was to achieve an underwriting profit (premiums less losses, loss adjustment expenses, and underwriting expenses) of at least 4%. This goal had been achieved in 8 of the previous 15 years, averaging 5.1%. Progressive had not had a net underwriting loss in this period. The third goal was to outperform the rest of the industry in underwriting profit, a goal it had accomplished in each of the previous 15 years, averaging 5.7% better than its competition. The fourth goal was a growth rate at least 15% higher than the GNP deflator measure of inflation. Since 1965 Progressive's compound annual growth rate had been 25.8%, compared to an industry growth rate of 11.2% and an inflation rate of 5.6%. However, the company had an inviolable principle that in trade-off situations profit was always to be preferred to growth.

Products, Marketing, and Competition

In 1980 Progressive's products were classified into three categories: (1) personal lines (nonstandard auto, recreational vehicle, and mobile home and low-value dwellings); (2) commercial lines (nonstandard commercial vehicle and liquor liability); and (3) credit-related lines (life/accident and health, lenders' collateral protection, credit vehicle, and other). *Exhibit 2* provides premium data by line and by state.

The company estimated that the total nonstandard auto market was about \$4.8 billion in 1979. About one-half of this was written from state-mandated, and in some cases company-supported, insurance pools for rejected drivers. Typically, state-mandated rates were lower than rates of private underwriters. The remaining market was shared among roughly 24 subsidiaries of large insurance firms and 100 specialty insurance companies, which wrote nonstan-

dard automobile insurance. Progressive ranked fourth largest among the specialty companies.

Competition in this market was based upon premium rate, commission rate to agents, quality and extent of service to agent and insured, and financial strength and stability of the underwriter. Progressive believed it had higher premium rates and lower agent commissions than the industry average. It sought to compete through superior service, especially servicing of claims, and through emphasis on the financial strength of the company.

The primary distribution channel for Progressive's personal and commercial lines was independent insurance agents, who were in turn called on by a sales force. Banks and finance companies (an increasingly important market) were called on by a separate credit-related sales force. Company management believed its use of a sales force, particularly to call on independent agents, to be unique in the industry. Independent insurance agents, who typically did a premium volume of \$300,000 to \$1,000,000, usually sold insurance for several standard companies and several nonstandard companies or subsidiaries of standard companies who wrote policies for high-risk insureds. This enabled an agent to place customers who had become nonstandard and had been classified rejected risks by the standard companies. Peter Lewis felt the independent agency system was in danger of diminishing in importance and was potentially inadequate for Progressive's future needs, but he was unsure of what alternative to use.

Organizational Structure

Progressive used a product management structure with 17 product managers reporting to two marketing vice presidents. Nonstandard auto product managers were responsible for one or several states; product managers of all other lines had nationwide responsibility. All were located at corporate headquarters in Mayfield Village, Ohio. These marketing vice presidents and the heads of operations (application processing), claims, and reinsurance reported to Dick Haverland. He, in turn, along with the heads of administrative services, data processing, finance, and personnel, reported to Peter Lewis. (*Exhibit 3* is an organization chart for the company as of January 15, 1980.) This structure was unique in the property-casualty insurance industry, which was characterized by large,

functional structures. Peter Lewis explained how the Progressive product management structure had evolved:

Between 1937 and 1973 we got business through superb claim service and by being sound financially. Until 1973 I did not even know what the word marketing meant—perceiving what the customer wants and giving it to him. Then, however, I decided that if we wanted to diversify geographically, we needed to organize in a way that people could both do their own thing and help generate profits. So we set out to hire independent people we could entrust with product management responsibility.

The company formally created the position of product manager in 1974, with responsibility for the profitability of the assigned product, and for implementing all important decisions related to it, from design to claims handling. Operating and claims personnel reported directly to their particular vice presidents but were responsible for meeting the standards set by the product managers, especially on processing applications. For the most part, product managers were MBAs from leading business schools and were under age 30. Product managers were expected to work closely with operations on the processing of applications and, to a lesser extent, with claims.

Progressive's sales force was divided into personal-commercial and credit-related specialists. The personal-commercial sales force (58 salespersons geographically located in 26 states) was organized first into zones, then into nine regions.

The 58 salespeople were expected to make about 40 calls per week, primarily to independent agents. The average salary for sales representatives was about \$20,000 (with a small performance bonus), there were no commissions, and activities (how to make a presentation, where to go, etc.) were fairly tightly controlled. Progressive was having some turnover problems with the sales force; in recent years annual turnover averaged about 50%.

The job of the sales representative entailed planning the day's and the week's activities, making presentations to agents, updating information for the computer system, and communicating with product managers to keep them advised of changes in the market, product ideas, and agent qualifications.

Twelve credit-related salespeople called on

banks, other financial institutions, and automobile dealers. Their job was more prestigious than that of the personal-commercial sales force; they were also paid more. Cumulatively, the sales force cost totaled approximately 1.5% of net written premiums.

The company had made extensive use of its own claims adjusters, in the belief that this should be the principal service delivered by a property-casualty insurance company. The approach emphasized providing prompt, efficient, empathetic, and fair claims service. Although independent claims adjusting firms were utilized, the company felt claims were settled more quickly and less expensively when handled by salaried adjusters. In 1979 alone, 19 new claims offices were established, bringing the total to 60. Claims offices were located in the 19 states that had the largest number of producing agents. The number of agents ranged from 3 for West Virginia to 4,825 for Ohio. California had the next largest number of agents (2,926), followed by Michigan, Florida, Illinois, Minnesota, and Texas. Of the more than 85,000 claims reported in 1979, 72.5% were adjusted by Progressive employees.

Dick Haverland, concerned about the level of expense engendered by the organization's structure, commented on possible improvement:

Our most significant disadvantage is G&A expenses. Our most significant competitor has a G&A of about 8%; Progressive's is 14%. This is due to our product management structure, sales force, operating complexity, and lack of automation. Because our rating guides are much more complicated, we need a sales force to convince agents to use our programs and help them with understanding our rate guide. We are trying to cut down on expenses in the existing system by becoming more automated.

Planning and Control

Planning began with the development of new departmental statements of weaknesses, opportunities, threats, and strengths (WOTS). Strategies were developed for improving weaknesses, capitalizing on opportunities, meeting threats, and maintaining and capitalizing on strengths. The CEO, COO, and heads of marketing, finance, operations, data processing, claims, personnel, and administration prepared WOTS statements. In addition, the marketing

departments prepared a preliminary one-year plan that included projections on insurance applications and premium volume by state on a monthly basis. This plan was presented to the officer group, and once approved, other departments proceeded to prepare their own plans based on the marketing projections. Annual budgets were also prepared for the plan.

The fundamental control system for monitoring progress against annual plan was the profit-by-line reporting system that provided, on a quarterly basis, operating and investment data for each product by state. It reported net written premiums, revenue, loss and loss-adjustment expense, acquisition expense, GAAP (generally accepted accounting principles) adjustment, GAAP-adjusted acquisition expense, administrative expenses, operating profits, investment income, and pretax profits. Expenses were broken down by department. This system was an important tool for product managers in controlling their products and setting rates.

In 1980, Progressive did no formal long-range planning. Peter Lewis explained why. "Long-range planning is a waste. We used to have one-, three-, and five-year plans. After a couple of years I decided this was crazy. Instead, we look into the future of capital, facilities, etc., on a rather informal basis."

Howard Zelikow, senior vice president, finance, saw some danger in the informal approach. "We have not yet put all the issues in one package," he said. "If we did we might find some gaps."

Dick Haverland, president and chief operating officer, maintained that long-range planning was valuable in the areas of capital, facilities, and computers. He felt that Progressive was starting to adopt more formalized planning procedures, but he added that it was difficult to do even two-year projections. He especially believed that more effort should be put into new product planning: "New product planning is important. We don't do enough of this."

Recruiting, Training, and Compensation

Peter Lewis believed that effective recruiting, training, and compensation systems were critical to Progressive's success. Beginning in 1976 the company began recruiting MBAs from leading business schools for positions in product management and finance. In 1979, for example, six MBAs were hired—one from Harvard, three from Stanford, and two from Tuck.

Progressive recently reconsidered its MBA recruiting effort in view of the time and resource demands it made on top management. Lewis, Haverland, Zelikow, Shroat (senior vice president, personal lines marketing/sales), and Conner (vice president, commercial, credit, and specialty products) gave recruiting a great deal of personal attention and were concerned by the level of turnover among the MBAs they recruited. They decided to continue mainly with a summer internship program, with more emphasis on recruiting undergraduates.

All employees prepared written performance objectives on which they were evaluated every six months, with changes in the objectives made as circumstances required. Salary increases and bonuses were related to performance evaluation against these objectives.

The Divisionalization Issue

Definition

Rick Dorman, product manager for motorcycles, expressed some confusion over the meaning of divisionalization:

I'm not sure what it means. I envision it as having a person in charge with three to four people reporting to him, such as marketing, operations, and claims. I would like to see an organization chart of the senior branch jobs. Will there be a personnel function? Will any finance be there other than accounting? It's never been articulated.

The purpose of divisionalization also was unclear to some people. Charlotte Jackson, product manager for Florida, stated that "Pete wants it for the same reason he wanted product managers. He sees it almost in moral terms: It's the right thing; he's not sure why."

Pat Cadden, senior vice president for operations, was uncertain about the eventual form of decentralization: "Pete may be weakening his position by claiming decentralization is a solution to any problems we are having. Somebody said the other day, 'Decentralization is a blanket answer to an undefined problem.' Peter says he is afraid this company is becoming subject to bureaucracy that even we fail to perceive."

Previous Experience with Divisionalization and Decentralization

Although divisionalization of the organization had just begun to generate widespread dis-

cussion, it was not a totally new concept. The company had experimented with divisionalization in 1977 when Pat Cadden was made marketing manager for Texas, with responsibility for all products. Some product managers felt that Pat had had to come to them continually for help and information. Rick Dorman commented that "he took our tables and put rates to them."

The company had also experimented with decentralizing operations (application-processing functions) on a geographical basis to determine whether the combination of local identity and faster, more personalized service favorably affected volume. Initial attempts at decentralizing operations began in 1973 in Los Angeles with 60 people and continued in 1975 in Portland with 30 people. Both attempts failed because Progressive had not adequately planned for the complexities of the local branch manager's job. In both locations the company failed to have the kind of person they needed to manage in a decentralized environment. Since 1975 three application-processing branches, employing a total of approximately 200 people, have been opened in Sacramento, California; Tampa, Florida; and Austin, Texas. The company initially experienced cost and quality problems in Sacramento. Pat Cadden moved to Sacramento in December 1978 and in March 1979 had the branch operating successfully. Since then, and in the other two locations, experience has been favorable (see *Exhibit 4*).

The overall experience with decentralization of operations was successful enough that Peter Lewis considered experimenting with the creation of an autonomous division that would provide for decentralized marketing as well as claims and operations. Jerry Shroat gave his views on the origin of Lewis's idea: "The way I see it, Pete kept talking to Dick about it, but Dick was resistive. The interaction was mainly between these two until Pete put it in Dick's objectives. Then it became a clearly defined issue. When people saw it in Dick's plan, the opposition started talking more."

Exhibit 5 contains excerpts from a memo written by Peter Lewis to the operating committee (the top management group, which met every Monday morning) on May 2, 1979, discussing this issue. *Exhibit 6* provides excerpts from Dick Haverland's plans for 1980, with particular attention to the divisionalization issue. *Exhibit 7* is a portion of a memo from Peter Lewis to all

employees summarizing the discussion at an operating committee meeting related to divisionalization and announcing the officers meeting scheduled for March 12, 1980.

Other Managers' Views

Dick Haverland outlined his ambivalence on the divisionalization issue:

I'm willing to try anything once, but I don't see that we will necessarily get better marketing decisions. With decentralized operations we have better and faster service, but it is more expensive. The potential advantage of divisionalization is that if the division president were really good he might get things going better, although he would not have any economies of scale. The real impact would have to be on marketing. If you really focus on the Florida market, even if you combine some product lines, you might make better decisions. Product managers could improve agency selection. Another potential advantage is that product managers here all believe the same thing, so change here is gradual and uniform, with everyone on the same horse. If you focus on local markets you can take everything into question.

Dick Haverland believed that with divisionalization just about all of the functions would ultimately be placed in the divisions, because the "division manager wouldn't want home office overhead charges. He would want authority over the resources being charged to him. Conceptually, data processing is the most difficult to move."

Dick Haverland discussed the problems of evaluating a divisionalization experiment:

If we do it, how do we evaluate it? To show it makes sense we would have to show that we couldn't have gotten the same results in Cleveland. What defines "works"? People who are predisposed either way will be able to keep their opinion.

With all of our talking about divisionalization we have created a high level of expectation. A disadvantage of not doing it is that people expect it to happen. There will be resistance in the organization from people who don't want to move.

Progressive's managers gave a variety of reasons for divisionalization; most notable among them were problems of bureaucracy, advantages of size, getting closer to the market, and

promoting growth. (The company goal was to become a \$1 billion company by 1987.) Chuck Chokel, national sales manager for personal lines, cited one additional reason:

In 1979, when growth slowed and we had time to catch our breaths, Pete realized communications were important. Pete has gone from knowing how all the employees feel, to knowing how all the important employees feel, to knowing the important employees. It is also a personal thing. Pete was probably talking to somebody who said nirvana is in communications. So when the issue of divisionalization came up Pete said, "Let's discuss this with people."

Bill Conner, vice president for credit-related products, echoed Chokel's view:

From Peter's point of view, what's happening is that he is not as involved as he was before. The company has gone from being small to being larger, but it is still very small. From his perspective, entrepreneurial hands-on management is no longer in existence here. He is perceiving a problem that hasn't arrived yet but will. Pete feels a bureaucracy is building here and that small units are advantageous in keeping spirits higher and responses faster. That's about it. And if so, I can tell you cheaper alternatives.

Lee Herrington, vice president for data processing, agreed:

We're larger now with more rigidity and controls, but I don't see any big problems. I'm curious to hear an elaboration on this elusive value of smallness and how we have suffered from not having it as much as we used to. When we were smaller Peter could control everything. I sense he is frustrated by not being able to do it now. Maybe he wants things to be like they used to be. He believes that smaller size is a distinct business advantage.

Divisionalization was also mentioned as a means of attracting high-caliber people. The division general manager's position would be quite desirable. Bruce Marlow, Chip Ruth, Jerry Shroat, and Howard Zelikow all mentioned that decentralization had been pushed heavily to recruits during the 1979 recruiting season. Jerry Shroat stated that Peter was "looking for something to turn these people on." It was also mentioned as a means for retaining capable individuals who might be leav-

ing for better opportunities elsewhere. One young product manager stated: "If I did not think there was a real commitment to divisions I would leave the company. Divisions provide an opportunity to redo the organization and give younger people an opportunity to aspire to these positions." Others, however, questioned the necessity of creating new jobs. Lee Herrington, vice president for data processing, said, "I don't see any evidence that we need to create challenging jobs. We aren't losing people."

Some people felt divisionalization would help the people to know the market better. Bruce Marlow, auto product manager for Illinois, Michigan, and Missouri, and a Harvard MBA, cited evidence to this effect. "A large number of regional insurance companies do very well, partially due to the good-old-boy network which builds up between the company, the agents, and the regulatory commissions." Chuck Chokel felt that being located in the market would enable the product manager to select some "bucket shop" agencies as a means of increasing volume. (Bucket shops are agents who do primarily substandard auto insurance, as opposed to agents who provide this primarily as a service and who emphasize standard business. Bucket shops tend to be less reputable, to have higher losses, and to be less reliable. Progressive did business with a number of them in Ohio and carefully selected only those that were reputable and well managed.) Chokel also spoke of advantages to having the product managers develop more personal ties with independent agents: "If the product manager is there, it is easier to know who's who. It helps to meet the key people and relate this to their numbers. The business takes on a personality. It would also enable the product managers to relate more effectively to the sales reps, by letting them see the kinds of problems that come up with customers."

Another rationale used by those promoting divisionalization was that operations were already decentralized and that this was having a negative effect on the coordination between product managers and operations personnel. Charlotte Jackson, auto product manager for Florida, described the problem.

I was closer to the business when operations was located here in Cleveland. Now the operations people in Tampa are high school graduates who can't answer the hard

questions. They do only the clerical part of underwriting. I used to get 60 to 65 operations-related questions per day. Now I get five, so I know some problems are going unsolved; agents are getting sore and stopping their business with us. Our people in Tampa are sheltering me from problems.

Concerns about Divisionalization

In addition to Peter Lewis's major concern about identifying the right people for divisionalization, officers at Progressive regularly mentioned several other potential problems: Would there be a willingness in Mayfield Village to decentralize sufficient authority to the division president? Would there be reduced positive interaction among product managers? Would there be a reduction in the scope of the product manager's job? Would there be a reduction in the number of "good" management jobs in the company? Would divisionalization cost more money? Would a purely geographically based structure be viable for the business?

Authority was an especially important issue. Chip Ruth, product manager, observed that divisionalization "will force the issue on passing down authority." Most of those who discussed the matter questioned whether Dick Haverland would be willing to give up sufficient authority to make the division manager or president effective in this role. Jerry Shroat asked, "Who's to say Dick would really release the reins?" Bill Conner remarked, "Pete is coming around in his mind on the need to give authority for commensurate responsibility. Psychologically he's relinquishing authority. Dick hasn't nearly as much. This is a big issue, since he would have to relinquish some authority and responsibility."

Chuck Chokel, Pat Cadden, and Howard Zelikow all had similar concerns. Chuck Chokel said, "The division will require more autonomy. . . . This is a difficult thing for Dick to deal with, since he controls a lot and wants to be involved in decisions." Pat Cadden had similar reservations: "Since it has taken so long to loosen the reins, even for people within this building, I question whether we'll give the person reasonable authority along with the responsibility. If we don't, . . . it will fail miserably. It is a question of the constraints on a person." Howard Zelikow observed, "We run a very controlled organization. We are so conscious of lines and who has authority. I don't see how

we can live with a marketing person at a branch."

Bill Conner, Bruce Marlow, and Charlotte Jackson expressed significant concern that divisionalization would separate the product managers and reduce interaction among them. Marlow said, "It is valuable to be able to talk to other product managers and the financial analysts. When you lose that, you lose creative ideas such as new ways to segment markets." Charlotte Jackson contrasted Marlow's concerns with the advantages of having product managers close to operations, "It is easier to keep in touch with other product managers long distance than it is to keep in touch with the market long distance."

A related problem of divisionalization was the perceived reduction in the scope of product managers' responsibility. Jerry Shroat commented:

Today when I talk to Charlotte I will push for results; but in the end Florida is only a small percent of my total revenues, so I can delegate more responsibility. In a division, the product manager really would not have profit and loss responsibility. The division manager would do the worrying about profits. The product manager job in the divisions would not have the same scope as it does now.

Some people suggested that divisionalization would actually result in a net reduction of attractive jobs for aspiring managers. This was mentioned by Rick Dorman, Bill Conner, Jerry Shroat, and Bruce Marlow. Bruce Marlow explained:

A premise of divisionalization is that it would result in more fulfilling jobs. But the effect is to end up with fewer substantive management jobs. For example, running Florida, we now have excellent jobs in product management, operations, and claims. There's a distance between them that helps them do their jobs. They have more freedom to manage their responsibility than they would if they were under the same roof. If they were close together, the product manager would undermine the operations manager. In our structure, the product manager only sets the rules.

In preparation for the March 12, 1980, officers' meeting, all officers were requested to submit their thoughts in writing to Peter Lewis or

Dick Haverland. In a memo to Dick Haverland dated February 29, 1980, Jerry Shroat wrote:

The way I see it, there would be about six or seven great jobs for Division Managers. However, if we went fully to this concept, I count the following jobs which would be diminished greatly or eliminated: senior v.p., marketing and sales; senior v.p., special lines marketing; assistant v.p., sales; two zone managers; six product managers; two assistant v.p., claims; one v.p., operations; and one or two managers of financial analysis.

Nearly everyone acknowledged that divisionalization would result in increased operating costs, at least in the short term. They noted that decentralized operations units were more expensive, even if they gave better and faster service. Charlotte Jackson stated: "One of the biggest cons I hear is the additional expense in terms of structure, systems, etc. It really would be a lot more expensive. Now we are very lean. I work 60-90 hours per week here. We don't have enough people. I'm trying to cut back on the number of hours I work. If we were properly staffed now it would be more expensive even without divisions."

An objection of a more basic nature was articulated by Bruce Marlow, who said, "I can't think of any parallel where a company has gone to a strictly geographic structure and had it work for them." In a memo to Peter Lewis and Dick Haverland dated February 27, 1980, Marlow wrote, "Instead of relying on our strength [the product manager/strong functional manager structure], it stakes our future on the weakness of the industry—the small, local company."

The Political Element—Managers' Alignments on the Issue

Each of the managers discussed his or her attitude toward divisionalization and his or her perceptions of others' attitudes with the case-writer. Those clearly favoring the concept were Chip Ruth, Charlotte Jackson, Chuck Chokel,

and Pat Cadden. Bruce Marlow, Rick Dorman, Jerry Shroat, and Bill Conner clearly were negative. Lee Herrington and Howard Zelikow were more neutral but leaning toward negative. Chuck Chokel remarked, "I'm basically in favor of divisionalization. It gives me a job to shoot for—president of a division." Rick Dorman explained his position:

I have no attraction to this concept for two reasons: (1) as soon as someone becomes a division manager I lose the motorcycle business in that state; and (2) in terms of rate making and statistical analysis, I can't see how the proposed system can do a better job than I can focusing on a single product. All of my decisions for motorcycles are on a nationwide basis. There is not enough business on a statewide basis, so the marketing guy in the division would have to depend on me anyway.

Howard Zelikow thought an enormous amount of effort would have to be devoted to divisionalization, and added, "Shouldn't we be devoting our efforts to major problems such as our marketing reliance on the independent agency system and the need for a new product development program?"

Several people offered views on how the product managers and sales force in general felt about divisionalization. Chuck Chokel felt that the majority of the sales force favored divisionalization because a slow turnover in regional sales manager jobs was blocking career paths. He also had heard that Dick Haverland sensed vice presidents as basically against the idea and assistant vice presidents basically for the idea. Rick Dorman noted that most of the product managers were against it, although he pointed out that there were mainly two types of product managers—automobile and all others. He also stated that "when the idea was first discussed, many of us felt that we might be division managers but now we realize maybe we won't." Bruce Marlow thought that some younger product managers favored divisionalization and that "lines are drawing up fairly well with people lining up on perceived self-interest."

Progressive Corporation (A)

Exhibit 1
Ten-Year Summary—Consolidated Operating Results (\$ thousands, except per share amounts)

<i>Insurance Operations</i>	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
Direct premiums written										
Personal lines	\$121,199	\$94,959	\$60,741	\$46,251	\$27,811	\$27,060	\$32,588	\$28,914	\$24,319	\$20,507
Commercial lines	8,184	8,130	5,617	4,208	7,506	6,548	4,170	2,091	1,445	1,009
Credit-related lines	9,988	8,870	11,842	4,112	2,998	2,885	3,294	2,178	1,983	1,674
Total	139,371	111,959	78,200	54,571	38,315	36,493	40,052	33,183	27,747	23,190
Reinsurance ceded	1,237	1,416	907	1,741	1,962	2,096	2,241	670	673	281
Reinsurance assumed	(12)	45	63	356	622	1,184	1,700	551	(498)	487
Net premiums written	138,122	110,588	77,356	53,186	36,975	35,581	39,511	33,064	26,576	23,396
Increase in unearned premium reserve	6,092	16,959	10,656	7,753	1,413	(3,009)	3,469	2,399	1,702	2,140
Premiums earned	132,030	93,629	66,700	45,433	35,562	38,590	36,042	30,665	24,874	21,256
Losses and loss adjustment expenses	81,961	55,467	40,455	28,945	22,287	22,704	20,164	18,332	15,439	14,525
Commissions	24,261	19,768	15,004	10,154	7,558	7,027	7,799	6,240	4,711	3,982
Other underwriting expenses	25,667	17,942	10,887	7,743	5,986	6,472	5,561	3,594	3,185	2,211
Total expenses	131,889	93,177	66,346	46,842	35,831	36,203	33,524	28,166	23,335	20,718
Statutory underwriting profit (loss)	141	452	354	(1,409)	(269)	2,387	2,518	2,499	1,539	538
Adjustments for										
generally accepted accounting	3,991	4,263	3,219	2,218	128	(708)	1,184	930	312	469
Adjusted underwriting										
profit (loss) before taxes	4,132	4,715	3,573	809	(141)	1,679	3,702	3,429	1,851	1,007
Provision for current and										
deferred federal income taxes	1,260	2,116	1,751	384	(85)	805	1,751	1,732	860	493
Adjusted underwriting										
profit (loss) after taxes	2,872	2,599	1,822	425	(56)	874	1,951	1,697	991	514
Pretax investment income, net expenses										
(including received from affiliates)	11,347	7,790	5,128	4,011	3,230	2,887	2,541	1,795	1,420	1,087
Provision for federal income taxes	1,551	1,303	426	241	173	182	258	58	82	87
Investment income after taxes	9,796	6,487	4,702	3,770	3,057	2,705	2,283	1,737	1,338	1,000
Interest expense after taxes	1,393	808	522	466	500	522	388	247	222	236
Investment income,										
less interest expense—after taxes	8,403	5,679	4,180	3,304	2,557	2,183	1,895	1,490	1,116	764
Income from insurance										
operations after taxes	11,275	8,278	6,002	3,729	2,501	3,057	3,846	3,187	2,107	1,278
Other operations—income after taxes										
Progressive Premium Budget	241	435	348	197	204	258	281	301	219	152
Progressive Corporation and other	(73)	(206)	17	(71)	(211)	(27)	(245)	(81)	(17)	(15)
Income before security sales	11,443	8,507	6,367	3,855	2,494	3,288	3,882	3,407	2,309	1,415
Realized gains (losses)										
on security sales	(868)	(494)	262	521	(623)	(1,430)	237	140	(193)	2
Net income	\$10,575	\$8,013	\$6,629	\$4,376	\$1,871	\$1,858	\$4,119	\$3,547	\$2,116	\$1,417
Per share										
Income before security sales	\$4.64	\$3.31	\$2.44	\$1.49	\$0.97	\$1.21	\$1.34	\$1.17	\$0.83	\$0.56
Net income	\$4.29	\$3.12	\$2.54	\$1.69	\$0.72	\$0.68	\$1.42	\$1.22	\$0.76	\$0.56
Average number equivalent shares	2,464	2,570	2,607	2,591	2,581	2,719	2,897	2,916	2,777	2,510
Dividends	\$0.32	\$0.24	\$0.20	\$0.15	\$0.12	\$0.10	\$0.08	\$0.053	\$0.041	\$0.03

Note: Not covered by report of independent auditors

Exhibit 2
Direct Premiums Written by Product and State, 1979 and 1978 (\$ thousands)

	Ohio		Florida		California		Michigan		Georgia		Wisconsin	
	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978
Personal lines												
Nonstandard auto	\$29,024	28,703	14,858	6,918	8,404	3,652	5,820	8,736	4,885	1,427	3,272	2,779
Recreational vehicle	2,914	2,254	1,462	907	2,340	1,690	2,731	1,778	533	282	348	259
Mobile home and low-value dwelling	732	762	2	516	588	428	320	200	309	314	104	83
Total	<u>32,670</u>	<u>31,719</u>	<u>16,322</u>	<u>8,341</u>	<u>11,332</u>	<u>5,770</u>	<u>8,871</u>	<u>10,714</u>	<u>5,727</u>	<u>2,023</u>	<u>3,724</u>	<u>3,121</u>
Commercial lines												
Nonstandard commercial vehicle	1,193	1,120	386	152	1,325	698	1,249	1,040	48	38	108	145
Liquor liability	-	-	-	-	-	-	865	1,688	-	-	-	-
Total	<u>1,193</u>	<u>1,120</u>	<u>386</u>	<u>152</u>	<u>1,325</u>	<u>698</u>	<u>2,114</u>	<u>2,728</u>	<u>48</u>	<u>38</u>	<u>108</u>	<u>145</u>
Credit-related lines												
Life/A & H	4,060	4,884	1,592	512	-	-	-	-	-	-	-	-
Lender's collateral protection	510	463	825	(167)	-	-	-	-	-	-	-	-
Credit vehicle	-	-	254	357	2,441	1,799	-	-	-	-	-	-
Other	662	340	56	33	-	(3)	-	-	-	-	-	-
Total	<u>5,232</u>	<u>5,687</u>	<u>2,727</u>	<u>735</u>	<u>2,441</u>	<u>1,796</u>	-	-	-	-	-	-
Grand total	<u>\$39,095</u>	<u>38,526</u>	<u>19,435</u>	<u>9,228</u>	<u>15,098</u>	<u>8,264</u>	<u>10,985</u>	<u>13,442</u>	<u>5,775</u>	<u>2,061</u>	<u>3,832</u>	<u>3,266</u>
% of total	28.1	34.4	13.9	8.2	10.8	7.4	7.9	12.0	4.1	1.8	2.8	2.9

Exhibit 2 (continued)

	Indiana		Virginia		Minnesota		Kentucky		All Other		Total		% Change
	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978	
Personal lines													
Nonstandard auto	\$2,752	1,534	3,313	1,820	2,496	1,349	2,155	3,243	21,078	18,909	98,057	79,070	24.0
Recreational vehicle	622	409	269	58	393	217	457	253	6,595	3,386	18,664	11,493	62.4
Mobile home and low value dwelling	221	195	56	31	85	57	616	876	1,445	934	4,478	4,396	1.9
Total	3,595	2,138	3,638	1,909	2,974	1,623	3,228	4,372	29,118	23,229	121,199	94,959	27.6
Commercial lines													
Nonstandard commercial vehicle	103	50	23	58	165	195	321	451	1,882	1,393	6,803	5,340	27.4
Liquor liability	-	-	-	-	422	1,100	-	-	94	-	1,381	2,789	(50.5)
Total	103	50	23	58	587	1,295	321	451	1,976	1,393	8,184	8,129	.7
Credit-related lines													
Life/A & H	-	-	-	-	-	-	-	-	-	-	5,652	5,396	4.7
Lender's collateral protection	(20)	(15)	-	-	-	-	-	-	(390)	552	925	833	11.0
Credit vehicle	-	-	-	-	-	-	-	-	(2)	115	2,693	2,271	18.6
Other	-	-	-	-	-	-	-	-	-	-	718	370	94.1
Total	(20)	(15)	-	-	-	-	-	-	(392)	667	9,988	8,870	12.6
Grand total	\$3,678	2,173	3,661	1,967	3,561	2,918	3,549	4,823	30,702	25,289	139,371	111,959	24.5
% of total	2.6	1.9	2.6	1.8	2.6	2.6	2.6	4.3	22.0	22.6	100.0	100.0	

Exhibit 4
Early Results in Decentralization of Operations

	Date Opened	No. Employees at Opening	No. Transferred from Cleveland	No. Employees (managers) ^a	% Increase		Days Required to Produce Policy	Costs Reduction ^c
					Applications	Agency Conversions ^b		
Sacramento	10/1/78	35	20	52 (8)	75.6	71.4	9/78: 19 3/80: 8.1	8% 8%
Tampa	10/1/79	82	21	108 (7)	5-8	no impact	9/78: 15.6 3/80: 6.5	slightly lower
Austin	2/1/80	26.5	3	24 (na)	no impact	na	1/80: 16.6 3/80: 8.7	na

a. As of February 1980

b. New agencies doing business with Progressive for the first time

c. As of March 1980

Exhibit 5

Excerpts from Lewis Memorandum

May 2, 1979

To: Operating Committee

Subject: 1980 Planning and Beyond—Organizational

We will shortly undertake our next planning cycle. We will continue to plan once a year for the ensuing year and long term using the WOTS statements as the basis for that planning. The purpose of this memo is to articulate ideas about future organizational structure for the company. The ideas are profound enough so that planning for experimentation with them requires as much prior thought as possible.

* * * * *

When we undertake the planning cycle, we will have to designate who is responsible for this part of it. We will also have to decide what kinds of things will be retained at the corporate level and what should be planned for at the decentralized level. Finally, we will have to agree on target dates for implementation of the experiment. To get the ball rolling, to stimulate thought and not to mandate anything, I suggest the following with respect to the above:

1. The executive vice president [at the time, Dick Haverland] has specific responsibility for developing the experiment. Organizationally, the "president" of the field company should report to the executive vice president.
2. That a decentralized company be up and running before the end of the first quarter of 1981.
3. That the following functions be maintained at the corporate level:
 - a. Management of the money
 - b. Establishment of growth and profit goals and definition of the way trade-offs between those goals will be handled
 - c. Establishment of general strategies such as personnel quality, markets (e.g., seek specialty niches as opposed to be all things to all people)
 - d. Possible centralized data processing systems
 - e. Definition of information collection and reporting systems
 - f. Capital allocation between the companies (divisions)
 - g. Overall compensation package

Some of the changes that this organization would call for would be:

1. Office site selection, rent or build, kind of equipment and configuration—to be determined by decentralized CEO.
2. Product managers would report to the decentralized CEO, not to corporate marketing staff.
3. Claim organization in the area would report to decentralized CEO, not the home office, not the corporate claims staff.
4. Sales organization would report to decentralized CEO.
5. Employee recruitment—though there would be a lot of interaction with corporate headquarters.

PBL:bjp

cc: management, organization and compensation committee

Exhibit 6

Excerpts from President's Plans for 1980

Creation of Decentralized Division

Creation of a decentralized division including sales, marketing, operations and claims responsibilities. Longer-term possibility of adding all insurance company functions, except investments.

Purpose

To create a division essentially independent of the home office to enable us to compete more effectively by:

- a. Focusing more attention on the market served—this will be accomplished by means of placing PM(s) for the state in the state.
- b. Attempting to operate more efficiently. Reduce bureaucracy, more hands-on management, etc.
- c. Experimenting with new ideas to attain increased profits.
- d. Creation of smaller work groups to facilitate impact and job satisfaction of all employees.

Objective

A slimmer, more market-attuned organization headed by individuals evaluated almost exclusively on profit/growth and efficiency—who will benefit from, but not be limited by, being associated with a sophisticated company.

Method and Timing

Office selected will already be operating as a branch. Effective date of transaction—not later than November 1, 1980.

To do:

- Select division and specific product responsibilities^a—April 1, 1980.
- Select division president—June 1, 1980.
- Develop procedures for interaction with personnel, Data Processing, Actuary, Subrogation and Lawsuit Control—July 1, 1980.
- Select organization—August 1, 1980.
- Begin operation—October 1, 1980.

Evaluation of success of experiment will consider:

- a. Degree to which there is innovation—in all aspects of division's operation (marketing, productivity, employee morale).
- b. Success of such innovation measured in growth, profit, market share, processing efficiencies, potential, etc.

a. Some products will continue to be managed/processed from home office. To extent new products are admitted in the state, division has first crack at its use. However, home office may use otherwise dormant licenses to introduce programs operated from home office.

Exhibit 7
Memorandum Summary

To: All Employees**From:** Peter B. Lewis**Date:** February 12, 1980**Subject:** Excerpts from Summary: Operating Committee Meeting, February 11, 1980

"Divisionalization" is different from the establishment of decentralized Operations branches that is now going on. The divisional concept contemplates pulling together a decentralized operating branch, the sales staff in a particular territory, and the claim staff in that territory, adding product management personnel and having all functions report to a division manager rather than to the functional officer located in the home office, with the division manager reporting to the Chief Operating Officer. Our plans currently call for experimentation with a division. The division is planned to be established and running by the end of 1980. If divisionalization is an effective organizational system, it is likely that our organizational structure will be dramatically different 3 or 4 years hence.

Because in the long run virtually every employee as well as the future of the company will be importantly affected by divisionalization, it is essential that we consider it carefully before going forward. There are important differences of opinion among senior management about the merits of divisionalization.

We agreed that an open and lively discussion of the issue would be constructive. In order to facilitate that discussion "position papers" outlining the pros and cons are to be prepared. PBL [Peter Lewis] is responsible for pulling together the pros, and RMH [Dick Haverland] the cons. This is to be accomplished within two weeks. A meeting of officers is scheduled for March 12, to start at 4:00 to carry on a discussion of divisionalization. Nothing will be done by way of implementing the first division at least until after that meeting.



Progressive Corporation

Divisionalization Decision (B)

Assistant Professor Robert G. Eccles prepared this case to serve as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

The following discussion paper was drafted by Peter Lewis and Dick Haverland, incorporating written comments from the officer group. It was the basis of discussion at the March 12 meeting.

I. Introduction

The purpose of this paper is to provide a basis for discussion on March 12. We draw no conclusions and make no recommendations. We have tried to identify alternatives, issues, pros and cons. Many of you have provided input. We thank you.

II. Definitions

A. Decentralization versus divisionalization.

Because Progressive has used *decentralization* to describe what we have done with our claims staff, sales force and are now doing with operations, we should differentiate by using the word *divisionalization*.

B. Division (divisionalization) defined:

1. General definition—an operating unit relatively independent of other operating units for which the division general manager has substantial, but not total (because he necessarily must interact with senior management), operating autonomy, and is responsible for most functions, such that the measurement of his profit result is realistic.
2. Possible forms for divisionalization to take.
 - a. *By market*—our preliminary discussions have focused on putting together the various functions associated with all business generated by our independent agency markets in one or more contiguous states. We could subdivide this further for divisionalization purposes. For instance, national insurance brokers and agents with under \$500,000 total premium, etc.

- b. *Territorially for all or virtually all markets*—we now have two distinct markets— independent insurance agents and lending and/or retail institutions. We could include all products from both markets in a territorially defined division.
- c. *By product*—there could be an automobile division. There could be a motorcycle division, etc.
- 3. Organizational structure alternatives (see attached organization charts).
- 4. Other definitional points.
 - a. Divisionalization is an effort to achieve a redistribution of managerial authority while recognizing the limits of the decision by which authority can be defined.
 - b. Divisionalization requires confidence that associates in decentralized positions will have the capacity to make sound decisions in the majority of cases, and such confidence starts at the executive level. Unless the CEO and COO and all other officers have a deep personal conviction and an active desire to delegate full decision-making responsibility and authority, actual divisionalization will never take place. The officers must set an example in the art of full delegation.

III. Why Consider Divisionalization Now?

An important part of planning how we can continue to succeed is to look at valid options. There is no pressure to do so. We are currently operating successfully. The problems we have identified with our organization structure are not serious now. We have time to conceptualize, debate, and plan. Additionally, it is an issue in everybody's mind and needs to be resolved.

IV. Why Divisionalize?

- A. *Economic reason*—the basic reason for divisionalization should be to facilitate a more effective focus on the markets we serve with the result that we will be able to do more business, more profitably, more rapidly. The assumption must be that we will put enough management talent closer to the defined market with the result that they will be more responsive and more effective in achieving desired results.
- B. *People reason*—we are developing an important tool of management talent. Our increasing sophistication and the technology of management has resulted in a dramatic increase in the amount of managerial work that *ought* to be done if our managers are to fulfill their responsibilities in a professional way. Our young potential managers are well trained, and they aspire to have broader (as opposed to deeper) responsibility and more authority. In order to respond to their ambitions, we ought to seek ways to delegate authority and assign responsibility. Divisionalization is one possible response to that. Other possible responses are:
 - 1. Less review of all decisions
 - 2. More hiring authority
 - 3. More spending authority
- C. *Organization progression reason*—divisionalization is a logical possible next step in the evolution of our organization, which has always been dynamic.
 - 1. When we were doing substandard auto in Ohio only, the company was totally centralized, and organized functionally, with profit responsibility resting on one man. The primary virtues of this functional organization were that the responsibility and authority structures were in complete alignment. Functional organization has the potential for great efficiency because of the close alignment of responsibility and authority within each functional activity.
 - 2. As we grew and expanded geographically and decentralized certain functions, we kept a functional organization.
 - 3. As the business became more complex and diverse, so that the product decisions could no longer be made by one person, we superimposed the product manager concept on the functional organization.

4. Divisionalization would tend to compress the distance between the functional manager and the individual authorized to resolve disputes between two potentially conflicting authorities (e.g., today if the California product manager has a disagreement with the California branch manager, it is resolved by the product manager talking to his boss, who talks to the Senior V.P.—Marketing, who talks to the COO, and the branch manager talking to the Senior V.P.—Operations, who talks to the COO with the COO resolving. In a division setup, the two disputing parties would go directly to the division general manager).

V. List of Additional Reasons to Divisionalize (n.b. the converse of virtually every pro is a con and vice versa).

- A. The closer the decision maker is to the market, the more responsive he can be to the needs of the market. Local solutions to local problems.
- B. To improve each employee's perception of his impact and his awareness of what's going on in other departments because the lines of interdepartmental communication up and down and around are shorter.
- C. Divisional GM jobs being available might make it easier to attract and keep top quality people.
- D. More of the personal touch in management.
- E. It may deal with some of the sales department turnover problems by:
 1. Facilitating interviews and motivation by nonsales people.
 2. Greater group identity.
- F. Preserves or recaptures the advantages of smallness.
- G. Greater coordination and cooperation among product management, sales, operations, claims, and any other functions that are divisionalized.
- H. We have the opportunity to experiment and we can have an isolated experiment now when there's little risk to the whole organization.
- I. Easier to control division.
- J. The more dispersed product managers are, the more likely there is to be innovation.

VI. Reasons not to Divisionalize

- A. Any "experiment" would likely result in placing our best people in the division. Two drawbacks:
 1. This will bias the result—one certainly wouldn't expect same results with next division.
 2. This will draw off top talent from more important responsibilities—which will hurt corporate efforts.
- B. No one has defined how a divisionalization experiment would be evaluated:
 1. Gut feel?
 2. Increased growth, market penetration, profit compared to current levels of expectation?

An experiment without clear benefits will be hard to sell to adversely affected parties.
- C. Organizational change is a negative. It creates uncertainties and requires re-adjustment for everyone involved. And everyone can see how it could possibly adversely impact them. People fear the worst and tend to disregard the positive influence it may have on them.
- D. If experiment is a success, the transition to a full-scale operation might be costly. As various jobs decrease in importance, more "combination" jobs will have to be created to challenge currently highly paid managers (e.g., AVP-Claims job may decrease by 10 offices, sales manager's job by four reps, PM's volume by 15%, etc.).

- E. Specialization available in a larger company would likely diminish unless large corporate staff were maintained. Examples—Operations, Claims, Sales training.
- F. The more authority given division managers, the more “perceived” inequities—the more morale problems may emerge.
- G. Home office staff would be more remote. There would be less constructive interaction—therefore fewer good decisions.
- H. Expenses of operation could rise due to loss of economies of scale. Must hire new people to replace those who refuse to move. This will result in excellent local employees leaving for lack of same opportunity that existed before.
- I. Dispersed companies will have dispersed images with the loss of a single corporate identity.
- J. Divisionalization will take lots of energy. Is this where effort should be, or should it be on new products, direct marketing, etc.? Where should priority be?
- K. We don’t have proven managers capable of doing what we expect. We’ll need more with divisions—particularly “control” types.
- L. Divisionalization is going to encourage and permit the general manager to get very involved in everything. This may result in a happy GM and a less happy group below—especially if GM is dynamic and innovative.
- M. With divisionalization, companywide communications, interchange, etc., will be reduced.
- N. Flexibility and mobility among divisions will likely diminish, limiting employee advancement options. GMs may be reluctant to give up good people—who also will have to move.
- O. Why change a system that appears to be working very well now?
- P. We know there will be control problems that do not now exist. We have the capacity to handle them. Will the “Devil’s Advocate” role of the Finance Department be lost to our detriment?
- Q. The division GM may not be given enough authority to carry on meaningful experimentation due to our control orientation.
- R. The perception exists very strongly on the part of many currently successful functional managers, ranging from marketing VPs through product manager, data processing managers, legal department managers, that they will lose a great deal of authority. They simultaneously perceive that they may not be selected as a division manager and that they might not be qualified as a division manager and that they might not want to move, if a move is necessary. Therefore, we create real current morale problems that are not easy to deal with.
- S. To the extent executives move, there is enormous expense (\$40,000 per?).
- T. Fundamental research (new product, agency selection, etc.) may not be initiated because of limited applicability.
- U. Product knowledge is more important than local knowledge.

VII. What Are the Next Logical Steps to Be Taken?

- A. The March 12 discussion may lead to the need to do additional research and to have enough discussion.
- B. Ultimately a decision has to be made by the CEO and COO.
- C. If the decision is not to divisionalize, it should be accompanied with an idea about when reorganization should be next considered and under what circumstances, and a method for communicating to the rest of the company that the decision has been so made and why.
- D. If the decision is to consider a divisionalized experiment, then much has to be done, including, but not limited to:

1. All key employees understand the concepts and reasons for divisionalizing.
2. A detailed plan for divisionalization which covers what needs to be done to move us from where we are to where we want to get.
3. Communication to and understanding of the plan by all key people, and acceptance by most.
4. Having on board a sufficient number of individuals who have evidenced to us the following qualifications:
 - a. Identified successful experience in managing people.
 - b. Identified successful experience with Progressive at making business decisions and dealing with the ambiguities that requires (this probably necessitates having been a successful product manager).
 - c. Having interacted personally with PBL and RMH, sufficiently so that PBL and RMH have enough confidence to delegate authority, knowing that the individual will consult with them when it's prudent to do so.
 - d. Sufficient confidence in him/herself to be able to seek, listen to, absorb, and consider advice from PBL, RMH and other top level operatives with functional responsibilities and experience, while still being able to act on his/her own and take full responsibility (and credit) for every decision.

VIII. Other Topics for Discussion

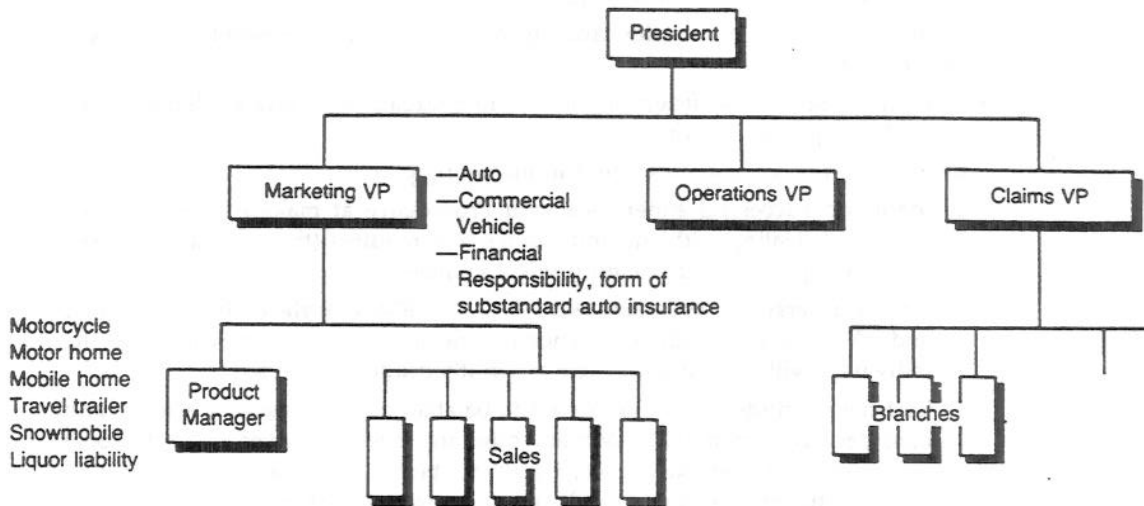
- A. What will make divisionalization necessary? Determining this will facilitate our planning, which in turn will reduce the level of uncertainty of all those interested in and affected by divisionalization.
- B. What additional criteria should be considered in evaluating whether to divisionalize and when?
- C. What additional characteristics should division managers have?
- D. Can we "experiment" with one division with no plan to divisionalize any further?
- E. What would be the criteria for determining that a division is a success?
- F. How to divisionalize—territorially or by market?
- G. What changes in control systems will be required if we experiment?
- H. What is the right reward system for division general managers?
- I. What functions should be included in the division? Now we assume that claims, sales, operations, and probably marketing are going to be included. What are personnel, data processing, accounting, and control? The only current functions that we think should be maintained centrally are financing, investment, establishing general financial policy and strategy, and overall control and reporting.

Peter B. Lewis

Richard M. Haverland

Geographical Independent Agency Division

Division at Day 1



Not Decentralized:

Actuary, Legal Control, Subrogation, Data Processing, Personnel, Training (Claims, Product Management, Sales and Operations), certain aspects of Building Management.

Subsequent Additions:

(Function of office size and personnel available—and division president's desire to take on more.)

1. Lawsuit Control
2. Subrogation
3. Building Management
4. Personnel
5. Training
 - a. Operations
 - b. Sales
 - c. Product Management
 - d. Training
6. Actuarial
7. SSMP^a (maybe barrier)—Financing "Consulting"
8. Data Processing
9. Accounting
10. Everything else
11. Money Management

^aStandards, Systems, Methods, and Procedures—Primarily responsible for PROTEUS implementation.



Merloni Elettrodomestici spa: Building for Profit

Introduction

In the fall of 1995, the management of Merloni Elettrodomestici (ELDO) was concerned. Were they slipping toward profitless prosperity? A rise in raw material prices, a strengthening of the Italian lira, and intense competition among large international rivals was squeezing profits. This was not the first time that profits had dipped. And management believed that in principle their multi-brand strategy and brand management matrix organization provided the answer. But making it work was a challenge. Dr. Vittorio Merloni, the founder and chairman, and his top team of Edoardo Del Neri, Carlo Nicolai, and Ing. Francesco Santini were seeking specific steps they could take to improve the company's performance.

Founded in 1975 in Fabriano,¹ Italy, ELDO was the youngest full-line producer of white goods in Europe. In the 1970s, revenue growth came from a nationally based single-brand strategy. The company's *Ariston* brand name became the Italian market leader in 1984.² In the late 1980s, however, the company adopted a three-brand approach as it developed a pan-European strategy leveraged by exports. In January 1988, ELDO acquired Indesit, a rival Italian producer, and in 1989 it acquired Scholtès, a French built-in appliance specialist focused at the high end of the market. These acquisitions made Merloni the fourth-largest European white goods maker and the sixth-largest worldwide.³ Sales were distributed across Italy (22%), France (21%), the United Kingdom (13%) and Holland, Portugal, and Spain (13%). Exports to the rest of the world totaled 16% of sales. After rising to 2.7% of turnover in 1994 from 1.9% in 1993, the firm operated close to breakeven. Financial statements are provided in **Exhibit 1**.

In 1995, Merloni Elettrodomestici (ELDO) manufactured over 2,000 different appliance products, including refrigerators, freezers, ovens, stoves, washing machines, dryers, and dishwashers. ELDO produced appliances in six Italian plants and other plants in France, Portugal, and Turkey. Other production came from joint ventures. In 1991, ELDO acquired a 48.3% interest in Philco Italia, an Italian washing machine manufacturer that exported to the Czech Republic, Greece, and other Mediterranean countries, and in 1992 ELDO acquired 22.41% of a Turkish manufacturer—Pekel Teknik—"in order to penetrate the Turkish market." ELDO increased the holding to a majority share in mid-1993. Argentron, a joint venture in Argentina between ELDO and two local firms, began

¹ Fabriano is located in the Marches, central Italy, northeast of Rome. The area has been a worldwide center of paper manufacturing since the late thirteenth century.

² ELDO, 1993 presentation 5/93, p. 5.

³ *Mondo Economico*, 3/90, p. 18.

Professor Joseph L. Bower prepared this case with the assistance of Sonja Ellingson Hout as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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production of appliances in mid-1993. More recently, ELDO had acquired the assets of New World, a U.K. manufacturer of appliances with strong brand recognition and strong distribution, for £20 million. Another £20 million would be invested to modernize its manufacturing.

Originally a privately held company, ELDO went public in 1987. Its stock traded on the Milan and Rome exchanges. The Merloni family, through its Fineldo holding company, held a 51.49% stake. Merloni's sister held 4.63%. Other major shareholders included Cordusio Soc. Fid., 10.19%, Merloni Termosanitari International, 4.37%, Swiss Bank, 5%, and Fondigest spa, 2.71%, with the remainder in public hands. From time to time ELDO issued nonconvertible savings shares that participate in the profits of the company. The average market value in 1994 was I.L. 575 billion.

The World Domestic Appliance Industry

World sales of major domestic appliances total approximately 200 million units per year valued at over \$U.S. 50 billion. While the major manufacturers compete worldwide, competitive rivalry is primarily regional due to the high cost of shipping large and heavy appliances long distances, technical regulations, and the low value added in the products. The industry was plagued by huge overcapacity, low profit margins, and close to zero market growth. Since World War II, real prices had steadily declined relative to other consumer products.⁴ The price of components to firms was essentially identical although different component choices meant that costs differed. Increasingly concentrated distributors and retailers had substantial pricing power over manufacturers.⁵

Fundamental characteristics of home appliances shaped the industry. Purchase frequency was low, and market demand was governed by macro forces including the level of disposable income, new and used housing sales, trends in population growth and household size, and lifestyle changes such as the growth of two-earner families. Market penetration varied by product and geographic region. Refrigerators were used in over 98% of U.S. and Western European homes, while dishwashers were used in only 52% of U.S. homes, and 42% in Sweden, 36% in France, and 24% in Italy.⁶ Only 15% of French homes had tumble dryers despite 88% having washing machines.⁷ Infrastructure limited penetration in some East European countries such as Poland where half the houses were not yet connected to a water supply in 1988. With the exception of microwave ovens, most products were in the 'mature' life cycle phase. Innovations such as induction heating, convection cooking, and self-cleaning ovens indicated that some products were entering a revival phase. Within a given technology class, however, products were highly standardized and buyers perceived little real difference between brands. This perception was heightened by standard product dimensions that were demanded by kitchen builders to coordinate appliances with counter tops and cabinets. Manufacturers countered these trends by vastly increasing the number of models offered.

The transformation to free market economies in Eastern Europe and Asia offered opportunities for market growth. For example, China was already the world's biggest national market for clothes washers and refrigerators,⁸ and India's \$3.2 billion appliance industry has been growing recently at a rate of 10-15% per annum.⁹

⁴ Baden-Fuller and Stopford, 1991, p. 500.

⁵ Wolfe and Asch, 1992, "Retailers Squeeze Electric Appliance Manufacturers."

⁶ *Appliance Magazine*, 6/95 p. 46, 2/95 p. 49, 9/95 p. 71.

⁷ *Nachrichten für Aussenhandel*, 6/12/91, p. 8.

⁸ *Appliance*, 7/93, p. 9.

⁹ *Financial Express Investment Week*, 9/29/91, p. 18.

Plastics and steel were the main materials used in appliances. Initial cost factors favored plastics, while durability (or life cycle cost) favored steel. Raw materials and components accounted for 70% of factory cost.

Key Companies in Europe's Major Domestic Appliance Industry

In 1995, *AB Electrolux* of Sweden was Europe's leading appliance producer.¹⁰ Household appliances accounted for 61% of its 1994 sales of SEK 108 billion (\$ 7.2 billion), and white goods 70% of those. Major brands include *Frigidaire* (third-largest in United States) and four European brands—*Electrolux*, *Zanussi*, *Rex*, and *Arthur Martin*—with a combined market share of 18% (the U.S. *Electrolux* vacuum cleaner firm has been unrelated to the Swedish company since the late 1920s). In 1994, profit on continuing operations was a negative \$70 million.

The *Electrolux* Group had grown to 600 companies and 130,000 employees in 46 countries,¹¹ primarily through acquisitions. Since 1970, *Electrolux* had acquired more than 300 companies, such as *White Consolidated* (U.S., 1986) and *Zanussi* (Italy, 1984). Despite the acquisitions, the five-year average growth in *Electrolux* net sales was 3.6%, and was falling. Gross profit margins had been slowly falling for years to the current level of 4.2%, and income has declined at an annual rate of 32%. In 1993, the company cut its dividend in half, the first reduction in 90 years.¹²

Whirlpool Corporation was the world's second-largest appliance producer. Over 98% of its \$8.1 billion 1994 sales was from appliances. It manufactured in 12 countries and marketed in more than 120 countries under brand names such as *Whirlpool*, *Kitchen Aid*, and *Kenmore*. In June 1991, *Whirlpool* announced its intention to "lead the globalization" of the home appliance industry.¹³ However, by 1992 the company's business was not yet fully global with 61% of sales in the United States, 36% in Europe, and 2.5% in other areas. *Whirlpool's* U.S. sales through *Sears* represented more than 30% of its total sales as recently as 1986.

Whirlpool's European sales are in large part a result of its full acquisition of the appliance business of N. V. *Philips* in 1991,¹⁴ after acquiring a 53% stake in January 1989. *Whirlpool* gained the right to use the "Philips" brand name until after 1995. By then it was expected that the awareness of *Whirlpool's* other brands would reach over two-thirds.¹⁵ In late 1992, *Whirlpool* restructured its international operations creating *Whirlpool Europe BV (WEBV)*,¹⁶ headquartered in Comerio, Italy. A French journal reported, "The firm's strategy is based on three principles: the rationalization of production, the commercialization of products, and the exploitation of brands. *WEBV* has brands including *Bauknecht*, *Whirlpool*, *Laden*, and *Ignis*, and in the new structure the brands will continue to be independent but will be commercialized by the same team."¹⁷ The *Wall Street Journal* reported that by the end of 1993, "separate sales organizations in 17 countries have been replaced by four regional sales offices . . . and they whittled the number of warehouses from 30 to 16."¹⁸ Until 1995 when it entered the low price segment, *Whirlpool* brands covered the middle to high end of the market. In

¹⁰ Sources: Hoover's Handbook of World Business 1993 and *Electrolux* 1992 Annual statement.

¹¹ *Mondo Economico*, 12/12/92, p. 49.

¹² *Fortune*, 9/20/93, p. 82.

¹³ *Wall Street Journal*, 8/1/91, p. C5.

¹⁴ *Wall Street Journal*, 4/24/91.

¹⁵ *European*, 11/3/91, p. 25.

¹⁶ *Appliance*, 11/92, p. 17.

¹⁷ *Agence Economique and Financiere*, 9/21/92, p. 5.

¹⁸ *Wall Street Journal*, 1/27/94, p. B4.

1995 European profits were low and Whirlpool's chairman was quoted in the *Financial Times* as turning attention to further improvements in his factory costs.

Whirlpool's compound average growth in net sales was 5.47% between 1990 and 1994 and gross profit margins have been slowly rising about 0.5% per year to the current 28.2%. Net income has grown at an annual rate of 21.71% over the past five years, and pretax margins have held steady at almost 4.5%.

General Electric Company is a \$70+ billion American conglomerate that sold \$5.9 billion of major appliances in 1994, principally in the U.S. market. Its major appliance lines include both the *GE* and *Hotpoint* brands of white goods together with microwave ovens and room air conditioners. By sales, it is the third-largest appliance producer in the world but is not currently a worldwide competitor. For the five-year period, 1990-1994, appliances are estimated to have accounted for a steady 10% to 11% of corporate sales, 6% of recent total operating profit (\$683 million in 1994, up from \$372 million in 1993) and 2% of capital expenditures.¹⁹ Due to the aggregation of revenues from aircraft engines, broadcasting (NBC television), financial services, etc., financial comparison with other major appliance manufacturers is not meaningful.

The London-based *General Electric Company PLC* (GEC) is *not* related to the U.S. GE. However, in early 1989, the £9.4 billion (\$14.1 billion) company pooled some of its European appliance activities with GE through joint ownership of General Domestic Appliances. GDA makes and sells *Hotpoint*, *Creda*, and other appliance brands, primarily in the U.K. market.

Maytag is a \$3.4 billion U.S. appliance maker. Over 95% of its 1994 sales were from appliances, with the remainder from vending equipment. Its brands include *Maytag*, *Hoover*, *Jenn-Air*, *Magic Chef*, and *Admiral*. Maytag operates 21 manufacturing plants in seven countries. The United States accounts for 79% of sales, Europe for 16.5%, and other countries, 4%. The company's Maytag brand products have a strong reputation in the United States for durability and reliability.

In 1993, Maytag made appliance history with an overly attractive promotion, offering free airline tickets to customers of its British subsidiary, Hoover. The promotion ran over budget when 200,000 people tried to collect on the offer, resulting in a \$67.1 million operating loss in the European appliance business on sales of \$495.5 million.

Maytag's compound average growth in net sales was down to 2.5% between 1990 and 1994, and gross profit margins have been slowly rising about 0.5% per year to the current 29.5%. However, pretax margins have increased to 7.2% or \$241.3 million in 1994, from 5.2% in 1990.

Bosch-Siemens Hausgeräte GmbH (a joint venture between Robert Bosch GmbH and Siemens AG) is a DM 6 billion (\$4. billion) German appliance and consumer electronics equipment maker and the second-largest producer in Europe. The German domestic market accounts for 55% of its 1994 sales, while the remainder are primarily in Western Europe, India, and Turkey. Although appliance figures are not broken out separately, it is thought to be retrenching outside Germany and cutting costs due to the state of the German economy. Bosch-Siemens was reported to have entered into a marketing and technical agreement with Maytag.²⁰ Its products are positioned in the higher quality segments of the market. The company made a profit of \$74 million in 1994.

Over the past 50 years, the major appliance markets of the world have become increasingly concentrated as a result of mergers and acquisitions. The growing global concentration is also reflected in each regional market. In the United States, for example, five companies²¹ accounted for

¹⁹ *Directory of Multinationals*, p. 538.

²⁰ *Wall Street Journal*, 3/31/93, p. A7; *New York Times*, 3/31/93, p. C1.

²¹ *Wall Street Journal*, 3/31/93, p. A7; *New York Times*, 3/31/93, p. C1.

99% of the 1994 market: Whirlpool 34%, GE 28%, Electrolux 17%, Maytag 14%, and Raytheon 6%. In Japan in 1994, six companies accounted for 90% of the market. In refrigerators, Matsushita held 27%, Toshiba 18%, Hitachi 15%, Sharp 13%, Mitsubishi 10%, and Sanyo 9%. In India, Godrej and Kelvinator jointly controlled nearly 75% of the refrigerator market while TVS Whirlpool had 45% of the automatic washing machine market.

The consolidation continued unabated. *The Economist* reported, "It is more economical for an acquirer to buy an existing appliance maker than to set up a new one on its own." In early 1993, for example, Brandt Electroménager was formed by combining the appliance businesses of Elfi (Italy) with the troubled Thomson Electroménager (TEM), a subsidiary of the French government-owned Thompson SA. The Ffr 9 billion (\$1.6 billion) company became the fourth-largest in Europe based on retail value (vs. units). Its brands include *Thomson, Brandt, DeDietrich, Thermor, Vedette, Sauter, Ocean,* and *Blomberg*. Whereas in 1975, 400 small and medium-sized manufacturers accounted for 85% of the market, by 1995, 6 companies held an 85% share.

The European Domestic Appliance Market

The European market provided a test bed to compare global and continental strategies due to its small geographic size, diverse national cultures, and economic breadth. **Exhibit 2** provides an overview of the 1994 European white goods market, while **Exhibits 3 and 4** and **Tables A, B, and C** provide a detailed look at the diversity in this market.

The Single European Act, which formed a single European market in 1992, defined the biggest consumer market in the world. Conventional wisdom held that "with the advent of the single European market of 1992, large companies will be favored over smaller existing European appliance makers."²² But it was far from obvious that in the short run such would be the case. Indeed, national champions remained the most profitable producers in the home appliance market.

The reasons had to do with the existence of national standards, different cooking and washing habits, and different attitudes toward appliances in the home. Whereas technical standards could be expected to be harmonized over perhaps five years, one could expect that the French would still load clothes from the top of their washing machines, while other Europeans used the front. They would cook using eye level, slow pyrolytic ovens which drew too much current for Italian homes. And the United Kingdom was unlikely to change its view that appliances were white utilities or that stoves should have double ovens. Different habits as far as water temperatures and spin speeds for washing also fragmented the market. Thus, compared to the large, homogeneous indestructible appliances found across the United States, European products were smaller, more elegant, and far more variegated.

Distribution was also different. While the trend toward concentration in chains of super stores was everywhere, the stage of development was quite different as indicated in the table below.

²¹ Calori and Lawrence, 1992, p. 34.

²² Calori and Lawrence, 1992, p. 34.

Table A Distribution Market Share by Type of Store, 1995

Country	Department Stores, Mail Order and Mass Merchandise	Electrical Retailers and Independents	Kitchen Specialists and Kitchen Builders	Others
Belgium	12%	80%	7%	1%
France	23	65	12	
Germany	20	43	33	4
Holland	8	66	26	
Italy	8	55	37	
Spain	22	63	12	3
United Kingdom	19	73	8	

Another source of fragmentation was the "built-in" market—appliances sold to home builders and home restorers to be built directly into the cabinets and counters of the kitchen and laundry. These products were sold directly to large home builders as well as to kitchen specialists. As shown below, the organization of the built-in market and its importance varied by country. Typically, style, features, and brand image were much more important than in the free-standing market although financial terms for the builder and delivery when the project was ready were also important.

Table B Built-in as a % of Total Market by Country, 1995

United Kingdom	15%
France	23%
Germany	44%
Italy	41%
Spain	32%

Table C Company Market Shares by Built-in vs. Free-Standing, 1995

Group	% Free Standing	% Built-in
Bosch-Siemens - '94	12.0%	21.7%
GEC	4.5	0.9
Electrolux	22.2	26.8
Whirlpool	11.0	11.7
Merloni	8.0	10.0

Merloni's Growth: Strategy, Organization, and People

The Merloni enterprise had its origins in Aristide Merloni's LP gas container business. The oldest son, Francesco Merloni, managed a large water heater and bathroom products business that had built on that base. The youngest son, Vittorio Merloni, founded ELDO's predecessor by diversifying into gas cookers (stoves) made in a plant in the Merloni's home town, Fabriano, Italy. He soon expanded into a full line of free-standing home appliances and then built-in products sold on the basis of low price and exciting advertising. By 1972, he began exporting on an opportunistic basis.

From the perspective of the 1990s, we can say that Merloni's early success was based on low manufacturing cost achieved in focused factories. As each product group was added to the line—clothes washers, refrigerators, dishwashers—a new factory was established in a town near Fabriano

but in the Marches region. These were farming communities, and enlightened labor practices involving cooperation with the farmers over the seasons laid a basis for efficient low-cost labor.

To manage the company's growth, Dott. Merloni built a functional organization and modern management systems. The Milan consulting firm GEA became an important partner in ELDO's growth, providing access to leading management technology and concepts. Plant managers and product development were consolidated under one technical and operations manager, Francesco Santini, while sales and exports were managed by Edoardo Del Neri. Volume fed low price, and low price drove volume.

A strategic review in the mid-1970s revealed that Merloni had achieved a secure position at the low end of the Italian market. While volume increases from greater Italian market share and exports could increase profits some, real improvement in margins would require improved quality. The gap between Merloni and the products of Germany's Bosch, Bauknecht, and AEG as well as the Dutch Philips was considerable both in the price consumers were willing to pay and in the assessment of quality by Merloni technicians.

Over the next 10 years the situation changed radically. Slowly, Merloni built an effective international sales organization. Early, large losses in the United Kingdom and France finally turned into profits and stable if modest market positions. Merloni had to carve its share from the part of the market not dominated by national champions or the high end German products. Indeed, in 1989 ELDO market research revealed a distinct belief in French, U.K., and North European markets that Italian products were inferior.

At the same time, massive investments in the factories, information technology, and product development provided low-cost, highly flexible manufacturing capacity that produced high-quality products. The strategic challenge now was to drive up margins.

The situation in the market, however, had also changed. While Merloni moved forward, others fell back; Bauknecht was sold to Thompson, and Philips bought Ignis—a large low-end Italian manufacturer. Finally, Whirlpool bought the appliance business of Philips. Zanussi, the largest Italian manufacturer with 14 brands, was bought by Electrolux. In 1989 ELDO's Ariston brand was No. 1 in Italy.

In 1988, Dott. Merloni grasped the opportunity to acquire Indesit, the dominant brand in the low-end market. In one stroke the company grew by two-thirds. Then in 1989 it acquired Scholtes, a leading high-end French producer of built-in products.

Profits surged and then stumbled as ELDO faced the problem of integrating the diffused Indesit organization into ELDO's focused factories. Indesit manufacturing was in multi-product plants set in industrial Turin and south Naples. Commercial practices were also different. Eventually the entire Indesit top management would have to be replaced.

Strategically, however, the problem was even more fundamental. Now ELDO had three brands, factories in three countries (Italy, 5; France, 1; Portugal, 2), sales organizations in Italy, Belgium, France, Germany, Holland, Portugal, and Spain, and exports in a dozen countries. (The summary ignores numerous participations in ownership of companies that were not strategically central, such as a 49% ownership of Philco Europe.)

ELDO research revealed that Indesit was well-recognized across Europe. In addition, Ariston was a power in Italy where it was thought of as a leader in style, innovation, and value. Outside Italy, however, it was merely another Italian brand, sometimes *inferior* to Indesit. Scholtes was well-regarded at the high end of the French market but was not widely known elsewhere.

After several years of experimentation and experience, ELDO management concluded that the three brands should be positioned as follows:

Indesit was a pan-European brand, able to take a dominant piece of the branded part of the mass/commodity market.

Ariston would be used as a higher margin brand able to use leading features and design to capture a significant position against the national champions (Hotpoint, Thompson, Bosch/Siemens). Outside Italy, *Ariston* would emphasize built-in markets where the Italian reputation for good design was a positive image enhancer.

Scholtes was a premium French brand in the high end of the built-in market. Wherever possible, this position would be extended geographically. Belgium, Germany, and Italy were logical targets.

On the technical side the factories were continuing their program to lower cost, increase flexibility, and improve quality. The company spent some I.L. 4 billion/year at each factory for maintenance and modernization.

In product development, extensive programs were undertaken to develop new features. ELDO spent I.L. 10 billion in 1995 on product development. Primary product performance, energy conservation, and pollution control were areas that received attention. Electronic components such as sensors and microprocessors already accounted for 12% to 15% of factory cost. One important area of development was "fuzzy logic" that permitted appliances to sense the task they had been given, e.g., the nature of the load and detergents in a dishwasher so as to optimize the washing cycle. Applied as a "push one button" concept under the trademark "Dialogic," it was hoped that the new products would materially assist the repositioning of *Ariston* in the markets outside Italy.

To deal with this complexity, the Boston Consulting Group recommended that ELDO adopt a matrix organization that used brand managers to coordinate the crucial relationship between countries and factories across the three brands. The decision to implement this change was taken in the fall of 1993. (Exhibit 5 shows the new organization.)

Managing the matrix required accurate and timely information. It was very important that sales and profitability, calculated market by market, match sales and profitability, calculated by product or by brand. Few companies in the world could do this reliably on an on-line operating basis (as opposed to off-line financial reports). To meet this need, Carlo Nicolai retained consultants to build the information system: BCG, BPCS, RSO, SSA, and Computer Vision.

In the fall of 1995, he was satisfied that considerable progress had been made in implementing the system. To accelerate progress, all modifications to information processing systems in the group were managed from Fabriano so that the companywide information infrastructure could be developed in a coherent fashion even while short-term fixes were made to accommodate operating problems. Completion was anticipated in a bit more than a year.

A fascinating elaboration of ELDO's strategy was provided by Merloni Progetti, an engineering project management group that sold home appliance factories to Eastern Europe. The Progetti team—33% of which was owned by ELDO and the rest by the Merloni family—enabled ELDO to participate profitably in less-developed markets where it would be prohibitively difficult to develop a sales organization and/or the ability to repatriate operating earnings. In 1995, ELDO's entry to China was being managed by Merloni Progetti.

The Fall Budget Crunch

All of these issues were made tangible in the series of meetings held for purposes of setting the 1996 budget during the last two weeks in October of 1995. Leading up to this period, the corporate management had provided guidelines indicating the levels of contribution margin (earnings at the factories) and gross margin (earning in the countries). Each country manager came to Fabriano with his proposed budget for two days of intensive discussion. Involved in these discussions were Vittorio Merloni, Edoardo Del Neri (the executive vice-president for marketing and sales), Francesco Santini (the executive vice-president for operations, development and research), Carlo Nicolai (the director of finance), the brand managers (Francesco Di Martino for Indesit and Mario Lobba for Ariston and Scholtes), Romano Caroli (the manager for washing products), Enrico Cola (the manager for cooking products), Mario Conti (the manager for refrigerators and freezers), and Francesco Natalini (the director of research and development).

This particular approach to budgeting was new, reflecting in part the new brand management organization and also significant work on the product development process led by GEA. Benchmark analysis had revealed that the productivity of the manufacturing organization was quite high and product quality highly competitive, but the coordination of product development plans with country, brand, and strategic priorities quite limited.

The contrast among the situations in France, Italy and the United Kingdom exemplified the challenge group management faced as they sought to use the multi-brand strategy and brand management structure to increase profitability with limited resources. The country managers' perspectives were quite different although the senior managers in Fabriano reflected a relatively homogeneous view.

The Plan for Ariston France

In some ways, the best example of the new ELDO strategy in practice was provided by ELDO France. Founded in 1974 to sell Ariston appliances in France, it had found progress to be slow and difficult. Italian products were at first viewed as low-end items so that high price discounts were needed to penetrate a difficult retail market. By the 1990s, however, the situation had changed markedly.

To begin, Ariston had built a reputation as a good-value, reliable product. Sales grew steadily and the price point firmed. Scholtes was bought in 1989 and the management integrated. With the purchase, ELDO acquired a brand that not only was represented well throughout French distribution channels but also had long-standing relationships with those retailers. M. Remi Didier, the managing director since 1994, had joined Merloni ELDO at that time, bringing 12 years of experience in the French white goods business.

The acquisition of Indesit also brought change. At first one organization dealt with both brands. Then in 1992, separate organizations were developed for Indesit and Ariston, and in 1994 a third group was established to manage Scholtes. By 1995, M. Didier and his colleagues were dealing with the challenges posed by profitable growth.

	1995 Unit Sales	vs. 1994	Market Share
Scholtes	270,000	+ 12%	3.3%
Ariston	235,000	+ 24	2.7
Indesit	331,000	+ 31	4.0
Other brands	40,000		
Merloni ELDO	876,000	+ 26	10.0% (8% in '94)

The position in the market had to be viewed by group as well as brand. Merloni's position was improving across the board, but especially in the built-in segment.

Group	Brands	Market Share Free-standing	Market Share Built-in
ELFI	Thomson, Brandt Vedette, Sauter, Thermor, DeDietrich	27%	34
Whirlpool	Whirlpool, Philips, AEG, Bauknecht	17	7.0
Electrolux	Electrolux, Zanussi, Rex, etc.	16	18.6
Merloni	Scholtes, Ariston, Indesit	8.8	15.0% (Scholtes was #1 with 13%)

The ELDO brands were positioned more or less in line with the Group strategy. Scholtes was the leader in built-in with a very prestigious image. Ariston was viewed as mid-line and Indesit as a "first price" brand. The goal of ELDO France was to become the No. 3 Group in the country. To that end, they sought to maintain leadership of Scholtes in built-in, while building the position of Ariston in built-in at mid-range prices, complementing Scholtes in the channels. In free-standing, they hoped to improve Ariston's position so that it equaled the lesser national brands, such as Vedette and Faure et Laden, while improving the share of Indesit to the first quartile.

To make this possible, advertising was required: for Scholtes where DeDietrich led in both spontaneous and assisted recall by consumers despite an inferior market share (Scholtes 5% and 54%, DeDietrich 10% and 73%); for Ariston in order to improve its image and recognition; and Indesit to change its image as a low-end Italian product. It was totally unclear whether resources would be forthcoming to cover all of these challenges.

Perhaps more important, the organization had to continue to develop its ability to serve the distribution and final consumers well. That meant consolidating the rapidly growing structure, 300 people in sales and administration at Lognes outside Paris, and 700 in the factory at Thionville.

Building Ariston in the United Kingdom

Another version of ELDO's interrelated challenges was provided by the situation in the United Kingdom. The U.K. appliance market was led by Hotpoint (the brand of GEC) and the Zanussi brand of Electrolux. Merloni ELDO had acquired a toe-hold in 1977 by acquiring a small manufacturer of table-top dishwashers and other home appliances. Early problems with products and a very different culture were overcome, but the marketing strategies of a highly concentrated retailing sector—(Comet, Curries, Rumbelo's and stores belonging to the electric utility controlled 70% of the market)—relied heavily on price, making it extremely difficult to introduce or position new brands. Losses remained heavy until Giuliano Gnagnati was made managing director in 1989, following three months in Harvard's AMP program. He described the change:

Ariston and Indesit were fighting in the same segment. The trade didn't care about Ariston, and Indesit price was so low it couldn't make money. The people were demotivated.

We decided to create a positive cycle. We adopted a multibrand strategy based on differentiation. A specific brand mission was defined for the consumer and the trade. Our profits did not justify the funds for advertising we would have liked so we turned to the organization.

We adopted a multibrand organization based on process. We said that the key to our mission were the customers, the trade, and the consumers. We created a chain that includes account management and put everybody behind our portfolio of brands.

The results were dramatic. A 20% reduction in overheads and people resulted in immediate profits, some of which were used to invest in advertising for the Ariston brand, positioned as an alternative to traditional U.K. brands and to Indesit. Gnagnati noted:

Indesit had always achieved reasonable volumes in the low-price segment, but with an inferiority complex. The temptation was to solve its problems by repositioning it in the middle market. With Ariston aimed at the mid-market, it was decided to make Indesit's price a positive. We said that Indesit has to be the affordable and reliable brand to be sold to modern, value-conscious customers and utilitarians, not poor people.

With the trade, Indesit was positioned as the fast-moving brand. Brand profitability was achieved through high net return on capital from a high rate of sale, not high gross margin.

In contrast, Ariston offered highly distinctive appliances at fair prices targeted at discerning customers who want the state of the art. Selected retailers were chosen who were willing to adopt a margin-building strategy. An award-winning set of trendy ads explained that Ariston "goes on and on and on."

	1989	1991	1994	% 1991-1994
Unit volume	472,000	349,000	598,000	+ 71%
Sales in Ital £	152,040	128,622	248,209	+ 93
Contribution	- 1.4%	7.0%	15%	

	1995 Volume	vs. 1994	Share 1995	Share 1994
Ariston	150,000	- 12%	2.0%	2.3%
Indesit	350,000	- 20	4.8	5.8
New World	120,000	- 14	1.6	2.1

The positive results permitted more ads including a powerful series for Indesit that "shouted" the new value proposition. In punchy amusing sit-com situations, Indesit said "Why Pay More?" (The campaign was withdrawn in 1994 at the insistence of Fabriano management.) The positioning was complemented by a "free-pricing" policy. Unlike its competitors, Indesit set a fixed price to the trade customers and allowed them to price at retail as they wished. Consequently, Indesit was often the brand used when dealers fought on price. As Indesit's momentum grew, its segment of the market (below £300) went from 20% to 40%. As leader in the segment, Indesit's total share moved to 5.8%.

In 1994, Merloni ELDO was the number 3 white goods group in the United Kingdom. Its market share was 8.5%, up from 5.3% in 1991. Sales were £111 million (600,000 units) and operating contribution was 15% before advertising of 2.5%; £2 million had been invested in a direct consumer service network.

While this strategy addressed ELDO's overall U.K. problem, a specific weakness in cooking reflected the unique preference of U.K. consumers for dual-cavity stoves. Free-standing stoves of the sort sold on the Continent held 30% of the market, so that Merloni's share of the cooking market was only 6% and the prospect for growth limited. Over the years, requests for investments to make dual-cavity stoves were rejected by the responsible managers in Fabriano who gave low priority to a proposal that in any event would dilute the focus of its superb high-volume Albacina factory. To resolve the problem, the United Kingdom proposed and received approval to acquire the brand and facilities of New World, a second-rank but long-standing U.K. brand. Present in all market segments except the very top where Scholtes enjoyed an insignificant U.K. presence, the brand brought Merloni's share of the cooking market to 15%. It was thought that high-end product from Thionville might be introduced to the United Kingdom under the New World brand. In 1995, £20 million was being invested to improve products and productivity.

The biggest challenge in 1995, however, was posed by the trade and the competition's response to the success of Indesit. To begin, the decline of in-town "high streets" had led the electricity company to close stores denying ELDO access to urban centers. The size of the low-price segment led to the collapse of Rumbelo's, further reducing the channel space and increasing the power of Currey's and Comet. In turn, Hotpoint and Zanussi placed specifically designed category killers in the under £300 segment aimed at Indesit. And as margins fell from an initial 25% to 15% or even 12%, Currey's chose to take Indesit out of its stores. In 1995, Indesit volume was down 100,000 units.

To turn the situation around, the U.K. operation sought funds to advertise the newly introduced Giugiaro line of Indesit products as well as Ariston.

Merloni Elettrodomestici, Italia—Dominant at Home

The situation in Italy reflected three decades of hard work. Beginning with a single brand, Ariston (named after Aristide Merloni, Vittorio's father), the company had sought to distribute its products through all channels in Italy. Massimo Giorgino recalled that he used to tell the sales department, "We had to be everywhere, like Coca Cola." With the acquisition of Indesit in 1989, the management had to deal with a second brand in the low-price segment. (In effect, Ariston's success had pushed Indesit's previous owners over the brink.)

The choice was "to make Indesit the most intelligently priced product, the most convenient in terms of price and quality, the most expensive product in the low-price segment in Italy. Our new products will enable Ariston to move up in market position to the level of the Rex brand [Electrolux's No. 1 Italian brand]."

Italian Performance by Brand

	1987	1989	1994
Ariston Sales	843,000	989,000	1,079,000
Share	14.9%	16.6%	17.3%
Indesit Sales		303,000	396,000
Share		5.1%	6.3%
Merloni Sales	643,000	1,333,000	1,520,000

ELDO vs. Competition in Italy

Company	1990 Market Share Italy	1994 Market Share Italy
Merloni	21.4%	25.2%
Electrolux—AEG, Zanussi/Rex, Electrolux	21.3	24.4
Bosch Siemens	3.2	2.2
Whirlpool—Whirlpool	9.9	8.1
Bauknecht, Ignis		
Ocean - Brandt, DeDietrich, Thomson	7.5	6.5
Candy - Candy, Rosieres	10.3	10.8

Merloni ELDO had a unit market share over 25%, greater than Electrolux. Ariston was the No. 1 brand followed closely by Rex and then Indesit. Merloni was stronger in built-in appliances than in free-standing (30%+ vs. 20%), reflecting great strength in cooking and refrigeration, and relative weakness in washing products. On the other hand, the objective of improving profitability through improved margins was nowhere more important than in Italy. Georgino explained:

In terms of numbers we have the better market share, but they have better turnover and profitability because they are in higher-quality segments and product groups that are more profitable such as washer-dryers, refrigerator-freezers, and dishwashers. In the coming years our effort for our brands must be to improve our product mix. Also, we are completely absent in the top segment, and therefore we obviously should think of introducing the Scholtes brand.

When we think of segments, we always think of price to the consumer, because in Italy we think of price for the trade. We move in terms of public price and then think of mark-up for the trade and then margins for our company.

So this is a very important transition point for our company. This is the battle line for brand management. We were very good at a business of growing volume without looking at details. But today we must try to gain market share in areas of high profitability and that means going into details. We must have control from planning to market to make specific choices, and we must have the means to guarantee the quality of products that correspond to a consumer's expectations for products at discretionary price-points. The brand director must insure the development of these products which is very difficult since we lock horns with the big international companies in these segments.

For example, in the built-in markets, some producers refused to use Ariston in their modular kitchen cabinets because they said it was not suitable. "We can't afford," they said "to offer the consumer a L30M cabinet with a product in it that also sells in a L5M cabinet." For this reason, we started using Indesit in the low-price built-in segment which permits Ariston to move up market. But there still exists a higher segment of the Italian market, perhaps 10%, which is reserved for brands of very high quality such as Bosch and Miele. That is where we can use Scholtes, although we would need some marketing support in order for it to be sold since it is not known in the market.

Massimo Georgino's discussion of the detailed work on product involved in improving the profitability of operations posed an interesting challenge for the factories that were already concerned with the challenge posed by increasing variety. Francesco Santini, the executive vice-president for Operations and R&D, noted, "We are present in a strategic way in 12 markets. We have three fundamental brands, but when we develop the products, we have to consider our four second-tier brands. At the same time we have 11 factories."

The table below reflects a rationalization following the 1989 acquisition of Indesit. More than 1,000 people were cut, and the manufacturing location of more than 8,000 components shifted. In 1994, the rating of the Italian plants ranged from top of class worldwide (Albacina) to very competitive. The same could not be said for all of the ex-Italy plants, some of which were too small.

The ELDO Factory System

	Indesit			Ariston			Scholtes		
	Fr	Cook	Wa	Fr	Cook	Wa	Fr	Cook	Wa
Italy									
Albacina		BI/FS			BI/FS			Thionville	
Communanza			X			X			X
hi-tech/speed product									
Carinaro	X	X		X					
lo-tech product									
Melano	X			X			X		
hi-tech/combinations									
Teverola			X			X			
lo-tech product									
Torino/None		FS	D/W			D/W			D/W
Portugal									
Sabugo		FS	X		FS				
Setubal	X			X					
France-Thionvill								X	
Turkey-Manisa	X			X					
U.K.-Manchester					NewWorld				

A project was under way to re-engineer the entire operation including operating processes, integrating logistics, and new product development. Santini noted:

... with limited resources we have to make a big choice. We are not able to be present in all dimensions of the market in all countries. The direction of development is quite clear, but what role should Ariston play outside of Italy, and Scholtes outside of France? What does the revaluation of the escudo mean for cheap manufacturing in Portugal? The strategy isn't fully worked out.

The people in the company are convinced that for now the clients—which means the brands—have to lead the development process. But we are very young to manage this way. More input is needed from the countries and maybe top management should clarify our country/segment strategy. It is very important to the way we modernize the factories outside of Italy.

Right now we have two goals. One is to recover the costs that we lost in the rise of raw material prices [3% of sales]. The second is to improve country input into the new product lines.

Outside observers who had benchmarked the ELDO operations against competitors noted that perhaps one-tenth as many marketing people were available to support the product development process. They also noted that basic maintenance and modernization of the large number of plants was a heavy burden on the budget.

Carlo Nicolai, the executive vice-president for finance and administration, commented on the same problem. He reflected on the decision to invest heavily in the upgrading of the Indesit line. "We invested in a better product, but how can we persuade the consumer? Our margins don't support the advertising necessary. I think we must remove the invisible features that the customers

don't want." To aid in the process, his organization was building a comprehensive information system run off a single companywide on-line data base. Already, data was available by country, brand, product, and business (free-standing vs. built-in). A year into the process he was pleased, but another year was required before the full benefits of the system would be available to the brand managers.

All these questions in their long-term and short-term manifestation landed on the desks of the two brand managers, Francesco Di Martino for Indesit, and Mario Lobba for Ariston and Scholtes. Created in 1993, the brand manager position was both vital as the key coordinating point in the product/country/brand matrix, and extremely demanding since the coordination of planning and operations necessary for the implementation of brand strategies required the cooperation of powerful country and product managers. Each had a staff of seven including a controller, marketing managers, and a program manager to monitor new product development. While they derived considerable influence from their role and from their direct relationship with Edoardo Del Neri to whom they reported, they had very limited formal authority. They were responsible for the planned industrial margin of their brands which reflected model mix. The marketing mix—advertising, promotion, and services—remained the responsibility of country managers reporting to Del Neri. The budgets under discussion in Fabriano did not break down the various marketing expenses by brand and built-in vs. free-standing. The brand managers discussed the plans, but their responsibility did not extend to so-called "trading margin."

For example, in order to improve the pricing of the Indesit line, the great Italian designer Giugiaro had developed a superb line of new products, but the funding of marketing reflected corporate priorities. Di Martino noted, "We had a very good advertising plan for a pan-European program—the first in the company—but the cost price squeeze has put us in a bad position. . . . When it comes to funds for product development, Italian companies are very good. With advertising it is difficult."

Lobba agreed, noting that "product development was doing very well with a new line of Ariston stoves and refrigerators, and Scholtes ovens very well received in the market, and with Dialogic products [fuzzy logic software used to make sophisticated operating menus easily accessible to the user] coming to market in 1996." This was particularly true in France where reasonable market shares—especially the strength of Ariston in the middle built-in segment permitted clear differentiation of the brands and reasonable prices.

In contrast, Di Martino noted that "the country in which we suffer is the United Kingdom. The competition is very tough. 'Why pay more?' helped to increase sales, but didn't give value to the Indesit brand. If you base your marketing mix primarily on price, then when there is a discontinuity in the market, there is a crisis."

For Lobba, "The big problem at the moment is getting the data necessary to allocate resources." This meant very fine cuts of model by country so that the competitive battle could be orchestrated with precision. Nicolai's new system would provide the data.

This difficulty in developing precise and fast plans in response to the market together with the lack of responsibility for expenses below the industrial margin affected the ability of the brand managers to contribute to the product development process even as the project to re-engineer that process identified input from marketing as the key area for improvement. Ing. Natalini, director of product development, noted, "We are known as a fast-reacting company. With the very high complexity in the business end of the marketplace, discipline and participation and common understanding on the basis of the new process has to be very widespread throughout the management. It has a good chance if there is very strong commitment of the top management of Merloni." That commitment seemed forthcoming, although all connected with the company knew that Vittorio Merloni would continue his hands-on involvement in product and process development. For that purpose he would turn directly to the three product managers.

Asked about the shift toward a market-driven system, Dott. Merloni responded, "It's not the market, it's the consumers that drive the company. And if you produce the products that they need at lower cost than the competitors, you are the leader. Is it the product driver or the market driver? You need the combination. Knowledge of the market is necessary to use the technology for the products."

But the challenge is really bigger. Five years ago, we decided to become one company, pan-European, multi-branded, close to customers. It was a very successful strategy—successful because we reduced the number of companies to one with different brands. But when we thought of this strategy, Europe was smaller than now. It was Europe in 1992.

After the crash of the Berlin wall, the strategy had to change because Europe became bigger and the market is growing very fast. If we want to maintain a 10% share covering markets from Stockholm to Istanbul and Lisbon to Moscow, we have to produce at least eight million units. Now we are producing six million units. How many brands should we have? Playing what role?

Remember that we are multi-brand by necessity. There is no brand in Europe that has more than 5% or 6% of the market, because we are not America. We have many languages with many tastes. To be one company, to use the same systems, the same networks, the same computers to serve these markets is very difficult.

Exhibit 1 Merloni Elettrodomestici—Income Statement (in millions of US\$)

	DEC 1994	DEC 1993	DEC 1992	DEC 1991	DEC 1990	DEC 1989
Total revenues	\$1,209.54	\$1,115.96	\$1,071.41	\$965.24	\$968.03	\$785.48
Operating expense	1,104.43	1,017.23	976.97	891.54	900.39	744.08
Depreciation and amortization—Total	51.19	44.02	43.67	40.04	37.35	28.34
Operating income	53.63	54.71	50.77	33.65	30.30	13.05
Interest and related expense	27.23	32.94	28.91	23.55	29.31	26.53
Nonoperating income (expense)—Total	4.01	3.94	-17.89	3.12	10.49	19.91
Pretax income	30.41	25.71	3.97	13.22	11.48	6.44
Appropriations to untaxed reserves	0	0	0	0	0	0
Income taxes—Total	6.26	10.24	2.7	3.46	5.59	7.34
Minority interest	-8.62	-5.26	0	0.24	0.38	-0.98
Net items—Total	32.76	20.73	0	0	0	0
Income before extraordinary items	-	20.84	1.27	9.52	5.51	0.08
Extraordinary items	-	0	0	0	0	0
Dividends—Total	-	0	0	0	3.53	0

(continued on next page)

Exhibit 1 (continued) Merloni Elettrodomestici—Balance Sheet (in millions of US\$)

	DEC 1994	DEC 1993	DEC 1992	DEC 1991	DEC 1990	DEC 1989
ASSETS						
Cash and short-term investments	\$71.29	\$56.36	\$18.89	\$20.65	\$60.41	\$81.48
Accounts receivable/debtors—Total	397.66	388.06	338.46	373.44	349.46	342.15
Inventories/stocks—Total	146.87	135.46	128.85	166.42	157.19	170.86
Current assets—Other	3.79	8.61	11.81	17.31	20.71	21.97
Current assets—Total	619.61	588.49	498.00	577.82	587.76	616.45
Fixed assets (net)—Total	289.20	258.80	193.48	222.21	201.46	201.43
Investments—permanent subsidiaries	-	0	0	0	0	0
Investments and advances—Other	41.24	59.46	76.85	79.94	73.11	41.21
Intangible assets	-	0	0	0	0	0
Assets—Other	-	16.85	23.44	28.02	29.23	29.61
Assets—Total	950.05	923.6	791.78	907.99	891.56	888.71
LIABILITIES						
Short-term borrowings—Total	\$146.83	\$112.27	\$43.09	\$128.76	\$115.26	\$121.98
Accounts payable/creditors trade	337.26	335.00	275.30	298.93	275.89	245.17
Current liabilities—Other	66.97	118.28	95.20	94.14	94.41	135.88
Current liabilities—Total	551.06	565.56	413.58	521.83	485.55	503.02
Provision—deferred taxes	9.06	13.37	10.93	15.63	16.65	12.94
Long-term debt	98.10	90.47	163.71	118.95	172.81	201.56
Minority interest	3.96	14.26	0.27	6.08	6.1	8.59
Reserves—untaxed	-	0	0	0	0	0
Liabilities—Other	68.05	65.71	51.25	61.00	53.89	46.35
Liabilities—Total	730.24	749.37	639.74	723.49	735.00	772.47
Shareholders' Equity	219.81	158.37	152.04	184.5	156.56	116.24

Source: Standard & Poor's, Global Vantage.

Exhibit 2 The 1994 European Market

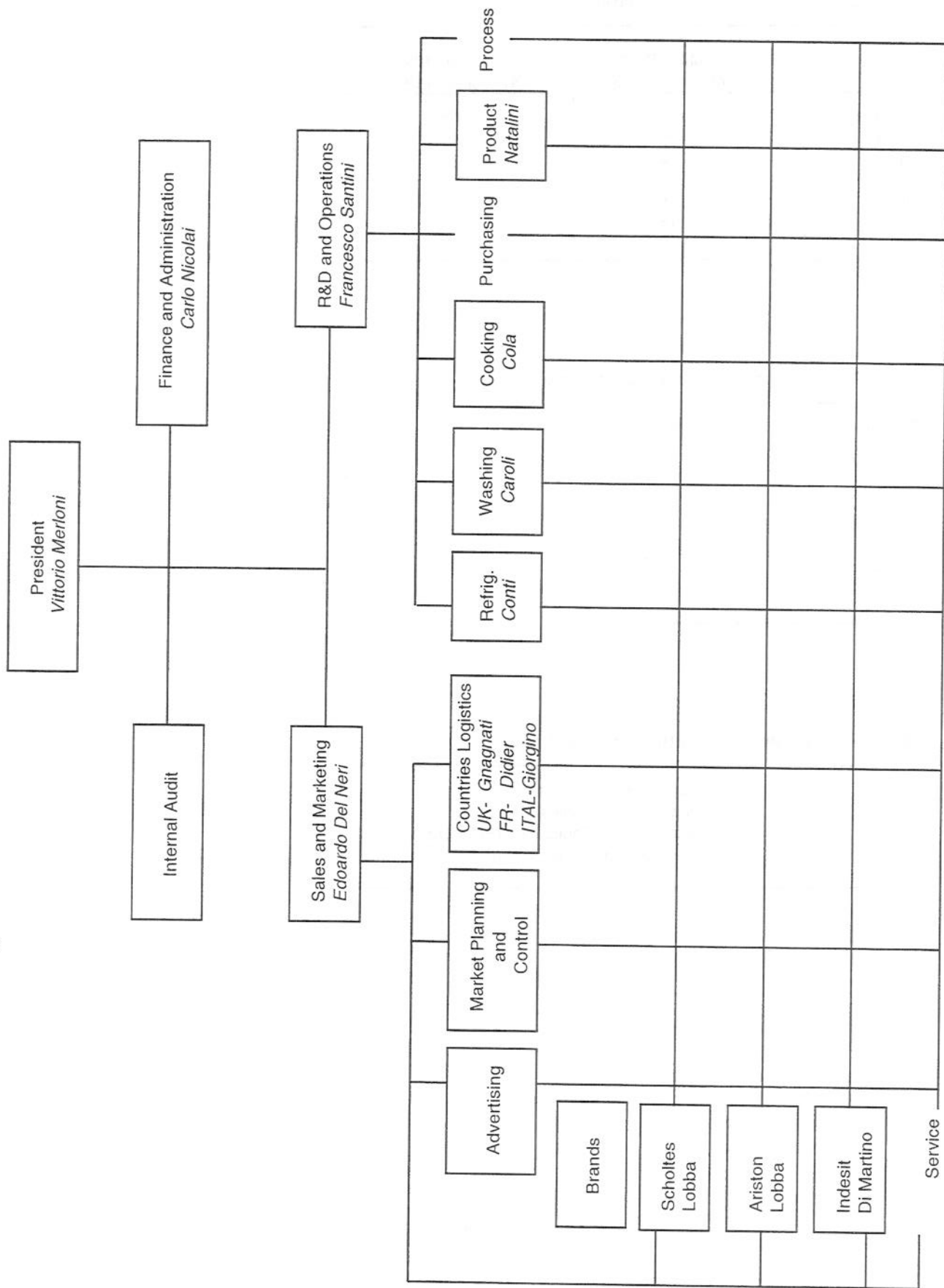
	MARKETS 45 Million Units	PRODUCTION 51.5 Million Units
Germany	28%	27%
France	18	12
Italy	14	39
Spain	10	10
U.K.	16	8
Others	15	4

Exhibit 3 1994 European Group Unit Market Shares

Electrolux	16%
Bosch-Siemens	16
Whirlpool	13
Merloni	10
Brandt EM	9
GE (U.K.)	5
Candy	5
Others	16

Exhibit 4 Concentration in the European Market

1970	70%	400	Local Manufacturers
1980	75%	150	National Companies
1990	80%	15	Multinational Companies (EU + U.S.)
1995	86%	7	Multinational Companies (EU + U.S.)



Matrix Management: Not a Structure, a Frame of Mind

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Matrix Management: Not a Structure, a Frame of Mind

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Top-level managers in many of today's leading corporations are losing control of their companies. The problem is not that they have misjudged the demands created by an increasingly complex environment and an accelerating rate of environmental change, nor even that they have failed to develop strategies appropriate to the new challenges. The problem is that their companies are organizationally incapable of carrying out the sophisticated strategies they have developed. Over the past 20 years, strategic thinking has far outdistanced organizational capabilities.

All through the 1980s, companies everywhere were redefining their strategies and reconfiguring their operations in response to such developments as the globalization of markets, the intensification of competition, the acceleration of product life cycles, and the growing complexity of relationships with suppliers, customers, employees, governments, even competitors. But as companies struggled with these changing environmental realities, many fell into one of two traps—one strategic, one structural.

The strategic trap was to implement simple, static solutions to complex and dynamic problems. The bait was often a consultant's siren song promising to simplify or at least minimize complexity and discontinuity. Despite the new demands of overlapping industry boundaries and greatly altered value-added chains, managers were promised success if they

would "stick to their knitting." In a swiftly changing international political economy, they were urged to rein in dispersed overseas operations and focus on the triad markets, and in an increasingly intricate and sophisticated competitive environment, they were encouraged to choose between alternative generic strategies—low cost or differentiation.

Yet the strategic reality for most companies was that both their business and their environment really were more complex, while the proposed solutions were often simple, even simplistic. The traditional telephone company that stuck to its knitting was trampled by competitors who redefined their strategies in response to new technologies linking telecommunications, computers, and office equipment into a single integrated system. The packaged-goods company that concentrated on the triad markets quickly discovered that Europe, Japan, and the United States were the epicenters of global competitive activity,

Christopher A. Bartlett is a professor of general management at the Harvard Business School, where he is also chairman of the International Senior Management program. Sumantra Ghoshal is an associate professor who teaches business policy at the European Institute of Business Administration (INSEAD) in Fontainebleau, France. This article is based on their recent book, Managing Across Borders: The Transnational Solution (Harvard Business School Press, 1989).

with higher risks and slimmer profits than more protected and less competitive markets such as Australia, Turkey, and Brazil. The consumer electronics company that adopted an either-or generic strategy found itself facing competitors able to develop cost and differentiation capabilities at the same time.

In recent years, as more and more managers recognized oversimplification as a strategic trap, they began to accept the need to manage complexity rather than seek to minimize it. This realization, however, led many into an equally threatening organizational trap when they concluded that the best response to increasingly complex strategic requirements was increasingly complex organizational structures.

The obvious organizational solution to strategies that required multiple, simultaneous management capabilities was the matrix structure that became so fashionable in the late 1970s and the early 1980s. Its parallel reporting relationships acknowledged the diverse, conflicting needs of functional, product, and geographic management groups and provided a formal mechanism for resolving them. Its multiple information channels allowed the organization to capture and analyze external complexity. And its overlapping responsibilities were designed to combat parochialism and build flexibility into the company's response to change.

In practice, however, the matrix proved all but unmanageable—especially in an international context. Dual reporting led to conflict and confusion; the proliferation of channels created informational logjams as a proliferation of committees and reports bogged down the organization; and overlapping responsibilities produced turf battles and a loss of accountability. Separated by barriers of distance, language, time, and culture, managers found it virtually impossible to clarify the confusion and resolve the conflicts.

In hindsight, the strategic and structural traps seem simple enough to avoid, so one has to wonder why so many experienced general managers have fallen into them. Much of the answer lies in the way we have traditionally thought about the general manager's role. For decades, we have seen the general manager as chief strategic guru and principal organizational architect. But as the competitive climate grows less stable and less predictable, it is harder for one person alone to succeed in that great visionary role. Similarly, as formal, hierarchical structure gives way to networks of personal relationships that work through informal, horizontal communication channels, the image of top management in an isolated corner office moving boxes and lines on an organizational chart becomes increasingly anachronistic.

Paradoxically, as strategies and organizations become more complex and sophisticated, top-level gen-

eral managers are beginning to replace their historical concentration on the grand issues of strategy and structure with a focus on the details of managing people and processes. The critical strategic requirement is not to devise the most ingenious and well-coordinated plan but to build the most viable and flexible strategic process; the key organizational task is not to design the most elegant structure but to capture individual capabilities and motivate the entire organization to respond cooperatively to a complicated and dynamic environment.

BUILDING AN ORGANIZATION

Although business thinkers have written a great deal about strategic innovation, they have paid far less attention to the accompanying organizational challenges. Yet many companies remain caught in the structural-complexity trap that paralyzes their ability to respond quickly or flexibly to the new strategic imperatives.

For those companies that adopted matrix structures, the problem was not in the way they defined the goal. They correctly recognized the need for a multidimensional organization to respond to growing external complexity. The problem was that they defined their organizational objectives in purely structural terms. Yet the term *formal structure* describes only the organization's basic anatomy. Companies must also concern themselves with organizational physiology—the systems and relationships that allow the lifeblood of information to flow through the organization. They also need to develop a healthy organizational psychology—the shared norms, values, and beliefs that shape the way individual managers think and act.

The companies that fell into the organizational trap assumed that changing their formal structure (anatomy) would force changes in interpersonal relationships and decision processes (physiology), which in turn would reshape the individual attitudes and actions of managers (psychology).

But as many companies have discovered, reconfiguring the formal structure is a blunt and sometimes brutal instrument of change. A new structure creates new and presumably more useful managerial ties, but these can take months and often years to evolve into effective knowledge-generating and decision-making relationships. And because the new job requirements will frustrate, alienate, or simply overwhelm so many managers, changes in individual attitudes and behavior will likely take even longer.

As companies struggle to create organizational capabilities that reflect rather than diminish environmental complexity, good managers gradually stop

searching for the ideal structural template to impose on the company from the top down. Instead, they focus on the challenge of building up an appropriate set of employee attitudes and skills and linking them together with carefully developed processes and relationships. In other words, they begin to focus on building the organization rather than simply on installing a new structure.

Indeed, the companies that are most successful at developing multi-dimensional organizations begin at the far end of the anatomy-physiology-psychology sequence. Their first objective is to alter the organizational psychology—the broad corporate beliefs and norms that shape managers' perceptions and actions. Then, by enriching and clarifying communication and decision processes, companies reinforce these psychological changes with improvements in organizational physiology. Only later do they consolidate and confirm their progress by realigning organizational anatomy through changes in the formal structure.

No company we know of has discovered a quick or easy way to change its organizational psychology to reshape the understanding, identification, and commitment of its employees. But we found three principal characteristics common to those that managed the task most effectively:

1. They developed and communicated a clear and consistent corporate vision.
2. They effectively managed human resource tools to broaden individual perspectives and to develop identification with corporate goals.
3. They integrated individual thinking and activities into the broad corporate agenda by a process we call co-option.

BUILDING A SHARED VISION

Perhaps the main reason managers in large, complex companies cling to parochial attitudes is that their frame of reference is bounded by their specific responsibilities. The surest way to break down such insularity is to develop and communicate a clear sense of corporate purpose that extends into every corner of the company and gives context and meaning to each manager's particular roles and responsibilities. We are not talking about a slogan, however catchy and pointed. We are talking about a company vision, which must be crafted and articulated with clarity, continuity, and consistency. We are talking about clarity of expression that makes company objectives understandable and meaningful; continuity of purpose that underscores their enduring importance; and consistency of application across business units and

geographical boundaries that ensures uniformity throughout the organization.

Clarity There are three keys to clarity in a corporate vision: simplicity, relevance, and reinforcement. NEC's integration of computers and communications—C&C—is probably the best single example of how simplicity can make a vision more powerful. Top management has applied the C&C concept so effectively that it describes the company's business focus, defines its distinctive source of competitive advantage over large companies like IBM and AT&T, and summarizes its strategic and organizational imperatives.

The second key, relevance, means linking broad objectives to concrete agendas. When Wisse Dekker became CEO at Philips, his principal strategic concern was the problem of competing with Japan. He stated this challenge in martial terms—the U.S. had abandoned the battlefield; Philips was now Europe's last defense against insurgent Japanese electronics companies. By focusing the company's attention not only on Philips's corporate survival but also on the protection of national and regional interests, Dekker heightened the sense of urgency and commitment in a way that legitimized cost-cutting efforts, drove an extensive rationalization of plant operations, and inspired a new level of sales achievements.

The third key to clarity is top management's continual reinforcement, elaboration, and interpretation of the core vision to keep it from becoming obsolete or abstract. Founder Konosuke Matsushita developed a grand, 250-year vision for his company, but he also managed to give it immediate relevance. He summed up its overall message in the "Seven Spirits of Matsushita," to which he referred constantly in his policy statements. Each January he wove the company's one-year operational objectives into his overarching concept to produce an annual theme that he then captured in a slogan. For all the loftiness of his concept of corporate purpose, he gave his managers immediate, concrete guidance in implementing Matsushita's goals.

Continuity Despite shifts in leadership and continual adjustments in short-term business priorities, companies must remain committed to the same core set of strategic objectives and organizational values. Without such continuity, unifying vision might as well be expressed in terms of quarterly goals.

It was General Electric's lack of this kind of continuity that led to the erosion of its once formidable position in electrical appliances in many countries. Over a period of 20 years and under successive CEOs, the company's international consumer-product strategy never stayed the same for long. From building locally responsive and self-sufficient "mini-GEs" in each market, the company turned to a policy of developing low-cost offshore sources, which eventu-

ally evolved into a de facto strategy of international outsourcing. Finally, following its acquisition of RCA, GE's consumer electronics strategy made another about-face and focused on building centralized scale to defend domestic share. Meanwhile, the product strategy within this shifting business emphasis was itself unstable. The Brazilian subsidiary, for example, built its TV business in the 1960s until it was told to stop; in the early 1970s, it emphasized large appliances until it was denied funding, then it focused on housewares until the parent company sold off that business. In two decades, GE utterly dissipated its dominant franchise in Brazil's electrical products market.

Unilever, by contrast, made an enduring commitment to its Brazilian subsidiary, despite volatile swings in Brazil's business climate. Company chairman Floris Maljers emphasized the importance of looking past the latest political crisis or economic downturn to the long-term business potential. "In those parts of the world," he remarked, "you take your management cues from the way they dance. The samba method of management is two steps forward then one step back." Unilever built—two steps forward and one step back—a profitable \$300 million business in a rapidly growing economy with 130 million consumers, while its wallflower competitors never ventured out onto the floor.

Consistency The third task for top management in communicating strategic purpose is to ensure that everyone in the company shares the same vision. The cost of inconsistency can be horrendous. It always produces confusion and, in extreme cases, can lead to total chaos, with different units of the organization pursuing agendas that are mutually debilitating.

Philips is a good example of a company that, for a time, lost its consistency of corporate purpose. As a legacy of its wartime decision to give some overseas units legal autonomy, management had long experienced difficulty persuading North American Philips (NAP) to play a supportive role in the parent company's global strategies. The problem came to a head with the introduction of Philips's technologically first-rate videocassette recording system, the V2000. Despite considerable pressure from world headquarters in the Netherlands, NAP refused to launch the system, arguing that Sony's Beta system and Matsushita's VHS format were too well established and had cost, feature, and system-support advantages Philips couldn't match. Relying on its legal independence and managerial autonomy, NAP management decided instead to source products from its Japanese competitors and market them under its Magnavox brand name. As a result, Philips was unable to build the efficiency and credibility it needed to challenge Japanese dominance of the VCR business.

Most inconsistencies involve differences between what managers of different operating units see as the company's key objectives. Sometimes, however, different corporate leaders transmit different views of overall priorities and purpose. When this stems from poor communication, it can be fixed. When it's a result of fundamental disagreement, the problem is serious indeed, as illustrated by ITT's problems in developing its strategically vital System 12 switching equipment. Continuing differences between the head of the European organization and the company's chief technology officer over the location and philosophy of the development effort led to confusion and conflict throughout the company. The result was disastrous. ITT had difficulty transferring vital technology across its own unit boundaries and so was irreparably late introducing this key product to a rapidly changing global market. These problems eventually led the company to sell off its core telecommunications business to a competitor.

But formulating and communicating a vision—no matter how clear, enduring, and consistent—cannot succeed unless individual employees understand and accept the company's stated goals and objectives. Problems at this level are more often related to receptivity than to communication. The development of individual understanding and acceptance is a challenge for a company's human resource practices.

DEVELOPING HUMAN RESOURCES

While top managers universally recognize their responsibility for developing and allocating a company's scarce assets and resources, their focus on finance and technology often overshadows the task of developing the scarcest resource of all—capable managers. But if there is one key to regaining control of companies that operate in fast-changing environments, it is the ability of top management to turn the perceptions, capabilities, and relationships of individual managers into the building blocks of the organization.

One pervasive problem in companies whose leaders lack this ability—or fail to exercise it—is getting managers to see how their specific responsibilities relate to the broad corporate vision. Growing external complexity and strategic sophistication have accelerated the growth of a cadre of specialists who are physically and organizationally isolated from each other, and the task of dealing with their consequent parochialism should not be delegated to the clerical staff that administers salary structures and benefit programs. Top managers inside and outside the human resource function must be leaders in the recruit-

ment, development, and assignment of the company's vital human talent.

Recruitment and Selection The first step in successfully managing complexity is to tap the full range of available talent. It is a serious mistake to permit historical imbalances in the nationality or functional background of the management group to constrain hiring or subsequent promotion. In today's global marketplace, domestically oriented recruiting limits a company's ability to capitalize on its worldwide pool of management skill and biases its decision-making processes.

After decades of routinely appointing managers from its domestic operations to key positions in overseas subsidiaries, Procter & Gamble realized that the practice not only worked against sensitivity to local cultures—a lesson driven home by several marketing failures in Japan—but also greatly under-utilized its pool of high-potential non-American managers. (Fortunately, our studies turned up few companies as shortsighted as one that made overseas assignments on the basis of *poor* performance, because foreign markets were assumed to be “not as tough as the domestic environment.”)

Not only must companies enlarge the pool of people available for key positions, they must also develop new criteria for choosing those most likely to succeed. Because past success is no longer a sufficient qualification for increasingly subtle, sensitive, and unpredictable senior-level tasks, top management must become involved in a more discriminating selection process. At Matsushita, top management selects candidates for international assignments on the basis of a comprehensive set of personal characteristics, expressed for simplicity in the acronym SMILE: specialty (the needed skill, capability, or knowledge); management ability (particularly motivational ability); international flexibility (willingness to learn and ability to adapt); language facility; and endeavor (vitality, perseverance in the face of difficulty). These attributes are remarkably similar to those targeted by NEC and Philips, where top executives also are involved in the senior-level selection process.

Training and Development Once the appropriate top-level candidates have been identified, the next challenge is to develop their potential. The most successful development efforts have three aims that take them well beyond the skill-building objectives of classic training programs: to inculcate a common vision and shared values; to broaden management perspectives and capabilities; and to develop contacts and shape management relationships.

To build common vision and values, white-collar employees at Matsushita spend a good part of their first six months in what the company calls “cultural

and spiritual training.” They study the company credo, the “Seven Spirits of Matsushita,” and the philosophy of Konosuke Matsushita. Then they learn how to translate these internalized lessons into daily behavior and even operational decisions. Culture-building exercises as intensive as Matsushita's are sometimes dismissed as innate Japanese practices that would not work in other societies, but in fact, Philips has a similar entry-level training practice (called “organization cohesion training”), as does Unilever (called, straight-forwardly, “indoctrination”).

The second objective—broadening management perspectives—is essentially a matter of teaching people how to manage complexity instead of merely to make room for it. To reverse a long and unwieldy tradition of running its operations with two- and three-headed management teams of separate technical, commercial, and sometimes administrative specialists, Philips asked its training and development group to de-specialize top management trainees. By supplementing its traditional menu of specialist courses and functional programs with more intensive general management training, Philips was able to begin replacing the ubiquitous teams with single business heads who also appreciated and respected specialist points of view.

The final aim—developing contacts and relationships—is much more than an incidental byproduct of good management development, as the comments of a senior personnel manager at Unilever suggest: “By bringing managers from different countries and businesses together at Four Acres [Unilever's international management-training college], we build contacts and create bonds that we could never achieve by other means. The company spends as much on training as it does on R&D not only because of the direct effect it has on upgrading skills and knowledge but also because it plays a central role in indoctrinating managers into a Unilever club where personal relationships and informal contacts are much more powerful than the formal systems and structures.”

Career-Path Management Although recruitment and training are critically important, the most effective companies recognize that the best way to develop new perspectives and thwart parochialism in their managers is through personal experience. By moving selected managers across functions, businesses, and geographic units, a company encourages cross-fertilization of ideas as well as the flexibility and breadth of experience that enable managers to grapple with complexity and come out on top.

Unilever has long been committed to the development of its human resources as a means of attaining durable competitive advantage. As early as the 1930s, the company was recruiting and developing local employees to replace the parent-company managers who had been running most of its overseas subsidiar-

ies. In a practice that came to be known as "-ization," the company committed itself to the Indianization of its Indian company, the Australization of its Australian company, and so on.

Although delighted with the new talent that began working its way up through the organization, management soon realized that by reducing the transfer of parent-company managers abroad, it had diluted the powerful glue that bound diverse organizational groups together and linked dispersed operations. The answer lay in formalizing a second phase of the -ization process. While continuing with Indianization, for example, Unilever added programs aimed at the "Unileverization" of its Indian managers.

In addition to bringing 300 to 400 managers to Four Acres each year, Unilever typically has 100 to 150 of its most promising overseas managers on short- and long-term job assignments at corporate headquarters. This policy not only brings fresh, close-to-the-market perspectives into corporate decision making but also gives the visiting managers a strong sense of Unilever's strategic vision and organizational values. In the words of one of the expatriates in the corporate offices, "The experience initiates you into the Unilever Club and the clear norms, values, and behaviors that distinguish our people—so much so that we really believe we can spot another Unilever manager anywhere in the world."

Furthermore, the company carefully transfers most of these high-potential individuals through a variety of different functional, product, and geographic positions, often rotating every two or three years. Most important, top management tracks about 1,000 of these people—some 5% of Unilever's total management group—who, as they move through the company, forge an informal network of contacts and relationships that is central to Unilever's decision-making and information-exchange processes.

Widening the perspectives and relationships of key managers as Unilever has done is a good way of developing identification with the broader corporate mission. But a broad sense of identity is not enough. To maintain control of its global strategies, Unilever must secure a strong and lasting individual commitment to corporate visions and objectives. In effect, it must co-opt individual energies and ambitions into the service of corporate goals.

CO-OPTING MANAGEMENT EFFORTS

As organizational complexity grows, managers and management groups tend to become so specialized and isolated and to focus so intently on their own immediate operating responsibilities that they are apt to respond parochially to intrusions on their

organizational turf, even when the overall corporate interest is at stake. A classic example, described earlier, was the decision by North American Philips's consumer electronics group to reject the parent company's VCR system.

At about the same time, Philips, like many other companies, began experimenting with ways to convert managers' intellectual understanding of the corporate vision—in Philips's case, an almost evangelical determination to defend Western electronics against the Japanese—into a binding personal commitment. Philips concluded that it could co-opt individuals and organizational groups into the broader vision by inviting them to contribute to the corporate agenda and then giving them direct responsibility for implementation.

In the face of intensifying Japanese competition, Philips knew it had to improve coordination in its consumer electronics among its fiercely independent national organizations. In strengthening the central product divisions, however, Philips did not want to deplete the enterprise or commitment of its capable national management teams.

The company met these conflicting needs with two cross-border initiatives. First, it created a top-level World Policy Council for its video business that included key managers from strategic markets—Germany, France, the United Kingdom, the United States, and Japan. Philips knew that its national companies' long history of independence made local managers reluctant to take orders from Dutch headquarters in Eindhoven—often for good reason, because much of the company's best market knowledge and technological expertise resided in its offshore units. Through the council, Philips co-opted their support for company decisions about product policy and manufacturing location.

Second, in a more powerful move, Philips allocated global responsibilities to units that previously had been purely national in focus. Eindhoven gave NAP the leading role in the development of Philips's projection television and asked it to coordinate development and manufacture of all Philips television sets for North America and Asia. The change in the attitude of NAP managers was dramatic.

A senior manager in NAP's consumer electronics business summed up the feelings of U.S. managers: "At last, we are moving out of the dependency relationship with Eindhoven that was so frustrating to us." Co-option had transformed the defensive, territorial attitude of NAP managers into a more collaborative mind-set. They were making important contributions to global corporate strategy instead of looking for ways to subvert it.

In 1987, with much of its TV set production established in Mexico, the president of NAP's consumer

electronics group told the press, "It is the commonality of design that makes it possible for us to move production globally. We have splendid cooperation with Philips in Eindhoven." It was a statement no NAP manager would have made a few years earlier, and it perfectly captured how effectively Philips had co-opted previously isolated, even adversarial, managers into the corporate agenda.

THE MATRIX IN THE MANAGER'S MIND

Since the end of World War II, corporate strategy has survived several generations of painful transformation and has grown appropriately agile and athletic. Unfortunately, organizational development has not kept pace, and managerial attitudes lag even farther behind. As a result, corporations now commonly design strategies that seem impossible to implement, for the simple reason that no one can effectively implement third-generation strategies through sec-

ond-generation organizations run by first-generation managers.

Today the most successful companies are those where top executives recognize the need to manage the new environmental and competitive demands by focusing less on the quest for an ideal structure and more on developing the abilities, behavior, and performance of individual managers. Change succeeds only when those assigned to the new transnational and interdependent tasks understand the overall goals and are dedicated to achieving them.

One senior executive put it this way: "The challenge is not so much to build a matrix structure as it is to create a matrix in the minds of our managers." The inbuilt conflict in a matrix structure pulls managers in several directions at once. Developing a matrix of flexible perspectives and relationships within each manager's mind, however, achieves an entirely different result. It lets individuals make the judgments and negotiate the trade-offs that drive the organization toward a shared strategic objective.


10
WHARTON REPROGRAPHICS

Philips and Matsushita: A Portrait of Two Evolving Companies

Throughout their long histories, N.V. Philips (Netherlands) and Matsushita Electric Industrial (Japan) had followed very different strategies and emerged with different organizational capabilities. Philips had built a worldwide portfolio of independent national organizations able to gain access to the company's renowned technological prowess and apply and adapt it to meet local market conditions. More recently, Matsushita had used overseas expansion to leverage its centralized, highly efficient operations in Japan, exploiting global-scale economies in research, development, and production to overtake Philips as the world leader in consumer electronics.

During the 1980's, both companies experienced challenges to their historic approaches, experimented with strategic and organizational changes, and attempted to alter company cultures. While Philips pursued more radical reorganizations aimed at globalizing its businesses and restoring financial stability, Matsushita tried to decentralize more decision making and assets in an attempt to build stronger organizations abroad. In 1990, it was unclear to observers just how successful these changes would be and how much each company should—and could—modify its strategy, its organization and its culture in pursuit of new organizational capabilities.

Philips: Background¹

In 1892, Gerard Philips and his father were two of the many capitalists to open small light bulb factories in Holland. Their Eindhoven-based venture almost failed. After trying unsuccessfully to sell the company, they realized that they needed commercial talent, and recruited Gerard's brother, Anton, an excellent salesman and manager, to join the company. By the late 1890s, Philips was growing quickly, and by 1900, it was the third largest light bulb producer in Europe.

¹This discussion of Philips' history is based on A. Heerding, *The History of N.V. Philips*, vols. 1 and 2, transl. Derek S. Jordan (Cambridge: Cambridge University Press, 1986); Frederik Philips, *45 Years with Philips: An Industrialist's Life* (Poole: Blandford Press, 1976); and D. Overkleef and L.E. Groosman, translated by James W. Watson, *The Dekker Perspective* (London: Graham & Trotman, 1988).

Research Associate Robert W. Lightfoot prepared this case under the supervision of Professor Christopher A. Bartlett as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. The section on Matsushita summarizes "Matsushita Electric Industrial (MEI) in 1987," HBS Case 388-144, by Sumantra Ghoshal (INSEAD) and Christopher A. Bartlett.

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From its founding, Philips developed a tradition of caring for workers. Anton actively supported *Eindhoven Vooruit* (or "Forward, Eindhoven!"), a group that brought together business leaders to address social issues in Eindhoven, including housing, a workers' sickness fund, and recreational facilities. Philips became the first Dutch corporation to create disability and sickness insurance for its workers; it built company houses, bolstered education, and provided local services; and it paid its employees so well that other local employers complained. When Philips incorporated in 1912, it set aside 10% of profits for employees.

Technological Competence and Expansion

While larger companies were racing to produce diversified lines of electric products, the young Philips & Co. made only light bulbs. This one-product focus and Gerard's technological prowess enabled the company to create significant labor-saving innovations. Company policy was to scrap old plant and use new machines or factories whenever advances were made in new production technology. Anton wrote down assets rapidly and, after they had been fully depreciated, set aside substantial reserves for replacing outdated equipment.

To catch up with competitors such as General Electric, Gerard soon opened both a physics and a chemistry lab. These labs addressed production problems as well as more abstract scientific ones. The labs developed a tungsten metal filament bulb that was a great commercial success and gave Philips the financial strength to compete against its giant rivals.

Holland's small size soon forced Philips to look beyond Dutch borders for enough volume to mass produce—even though expanding abroad meant competing in a series of local markets. In 1899, Anton hired the company's first export managers to build up a network of foreign agents. The managers spent a full 8 to 10 months of every year traveling to establish new markets in such diverse places as Japan, Australia, Canada, Brazil, and Russia. When the company incorporated in 1912, the Philips brothers also appointed several Dutchmen with extensive knowledge of foreign markets to Philips' supervisory board.

In 1912, as the electric lamp industry started to show signs of overcapacity, Philips started building sales organizations abroad in the United States, Canada, and France, and other cartel-free countries. Anxious about the prospect of antitrust legislation, General Electric did little to prevent Philips from entering American markets at that time. All other functions remained highly centralized in Eindhoven. In many foreign countries, Philips created joint ventures with domestic companies to gain acceptance in local markets.

Meanwhile, new technologies required more precise manufacturing techniques, and Philips integrated backward into machine tool making. When World War I interrupted deliveries of glass bulbs and argon gas, Philips integrated backward into glass bulb production, air separation, and even cardboard packaging. Thus backward integration spurred product and process development, and gave the company a quality advantage over its competitors.

In 1916, Philips entered into its first technology sharing agreement with General Electric and in 1919, into the "Principal Agreement," which gave each company the use of the other's patents. The agreement also divided the world into "three spheres of influence": General Electric would control North America; Philips would control Holland; both companies agreed to compete freely in the rest of the world. General Electric also took a 20% stake in Philips.

After 1919, Philips began evolving from a highly centralized company whose sales were conducted through third parties to a decentralized sales organization with autonomous marketing companies in fourteen European countries, China, Brazil, and Australia. In the 1920s, the company opened more sales organizations in Asia, Africa and Europe. Foreign share ownership grew so large that in 1920, Philips had to create a holding company to secure Dutch control.

Over time, the company broadened its product line significantly. In 1918, it began producing electronic vacuum tubes; eight years later its first radios appeared, capturing a 20% world market share within a decade; and during the 1930s, Philips began producing X-ray tubes. The Great Depression brought with it trade barriers and high tariffs, and Philips was forced to build local production facilities to protect its foreign sales of these products.

Organizational Development

One of the earliest traditions at Philips was joint leadership between commercial and technical functions. Gerard, an engineer, and Anton, a businessman, began a subtle competition where Gerard would try to produce more than Anton could sell and vice versa. Nevertheless, the two agreed that strong research and development efforts were vital to Philips' survival.

During the late 1930s, in anticipation of the impending war, Philips transferred its overseas assets to two trusts, British Philips and the North American Philips Corporation; it also moved most of its vital research laboratories to Redhill in Surrey, England, and its top management to the United States. Isolated from their parent, the individual country organizations became more independent during the war.

Because waves of Allied and German bombing had pummeled most of Philips' industrial plant in the Netherlands, Philips' management board decided to build the postwar organization on the strengths of the national organizations (NOs). Their greatly increased self-sufficiency during the war had allowed them to become adept at responding to country-specific market conditions—a capability that became a valuable asset in the postwar era. For example, international wrangling precluded any agreement on television transmission standards, and each nation decided at different times whether to adopt PAL, SECAM, or NTSC standards. Furthermore, consumer preferences and economic conditions varied. In some countries, rich, furniture-encased sets were the norm; in others sleek, contemporary models dominated the market. In the UK, the only way to penetrate the market was to establish a rental business; in richer countries, a major marketing challenge was overcoming elitist prejudice against television. In this environment, the independent NOs had a great advantage in being able to sense and respond to the differences. Product development was a function of local market conditions: Philips of Canada created the company's first color TV; Philips of Australia created the first stereo TV; and Philips of the UK created the first TVs with teletext.

While NOs took major responsibility for financial, legal, and administrative matters, fourteen product divisions (PDs), located in Eindhoven, were formally responsible for development, production, and global distribution. (In reality, the NOs' control of assets and resources and the PDs' distance from the operations often undercut this formal role.) The research function remained independent and expanded internationally with eight separate laboratories in Europe and the United States.

Within the NOs, the management structure mimicked the legendary joint technical and commercial leadership of the two Philips brothers. NOs were led by a technical manager and a commercial manager. In some locations, a finance manager filled out the local management team. These three managers reached decisions collectively. Below them, cross-functional coordination was promoted at three levels. Product teams, comprising junior managers from the commercial and technical functions, set product policies and carried out administrative functions. Cross-functional coordination also occurred at the product group level through the group management team, whose technical and commercial members met monthly to review progress and resolve inter-functional differences. Finally, the senior management committee of each subsidiary (with top commercial, technical and financial managers) reviewed progress to ensure that product group directions fit with national strategies and priorities.

Management adopted a type of geographic/product matrix to manage this organization. NOs reported directly to the management board, which Philips enlarged from four members to ten to handle this increased responsibility. Top management wished to remain in control of operations and believed that without such an expansion, the center would atrophy into a supervisory body. To lead the management board, a four-man "presidium" was created.

The board encouraged interaction with the highly autonomous NOs. Each NO sent envoys to Eindhoven to represent its interests, and top management made frequent country visits. Two factors facilitated communication. First, all top managers had been with the company for most of their careers and usually had foreign tours of duty, so they had a good sense of the whole organization. Second, English was spoken by all top managers and used in all key company documents. In 1954, the International Concern Council was established to formalize regular meetings among the principal managers from all the NOs and the board of management.

The overwhelming importance of foreign operations to Philips, the commensurate status of foreign subsidiaries within the corporate hierarchy, and even the cosmopolitan appeal of many of the subsidiaries' locations encouraged many Philips managers to take extended foreign tours of duty, working in a series of two or three year posts. This elite group of expatriate managers identified strongly with each other and with the NOs, and had no difficulty representing their strong, NO-oriented views to corporate management. Further, Philips had no trouble attracting highly capable local nationals to their subsidiaries.

Changing Economics and Attempts at Reorganization

In the 1960s, the creation of the Common Market eroded trade barriers within Europe and diluted the rationale for maintaining independent, country-level subsidiaries. New transistor- and printed circuit-based technologies demanded large production runs possible only in global-scale plants, and many of Philips' competitors were moving production of electronics to new facilities in low-wage areas in East Asia and Central and South America. Furthermore, despite its many technological innovations, Philips' ability to bring products to market began to falter. In the 1960s, the company invented the audiocassette but let its Japanese competitors capture the mass market. Almost twenty years later similar problems still existed. Although Philips developed the V2000 videocassette format—superior technically to Sony's Beta or Matsushita's VHS—it could not successfully market the product. Indeed, North American Philips rejected the V2000 outright, choosing instead to outsource, brand, and sell a VHS product. Within three years of introducing its own format, Philips was forced to abandon V2000 and produce a VHS product under license from Matsushita.

Over two decades, five chairmen experimented with reorganizing the company. Hendrik Van Reimsdijk (1971 to 1979), Dr. Rodenburg (1979 to 1982), Wisse Dekker (1982 to 1987), Cor van der Klugt (1987 to 1990), and Jan Timmer (from 1990) all tried to make the company more flexible, and above all, more profitable.

Van Reimsdijk and Rodenburg Reforms

Concerned about the growing problems facing Philips in 1971, the newly-appointed chairman van Reimsdijk created an organization committee to prepare a policy paper on the division of tasks, responsibilities and competences between the product divisions and the national organizations. Their report, dubbed the "Yellow Booklet," outlined the disadvantages of Philips' matrix organization in 1971:

Without an agreement [defining the relationship between national organizations and product divisions], it is impossible to determine in any given situation which of the two parties is responsible. Joint responsibility, while sometimes giving rise to "constructive friction," can also lead to operational inefficiencies. As operations become increasingly complex, an organizational form of this type can lower the speed of reaction of an enterprise. Unclear definition of the dividing lines between the various areas of responsibility can prevent the flow of information from fulfilling its true function.

On the basis of this report, van Reimsdijk proposed a change in the managerial relationships between Product Divisions (PDs) and National Organizations (NOs)—"tilting the matrix" in his words—to allow Philips to increase the scale of production, decrease the number of products marketed, concentrate production, and increase the flow of goods among national organizations. He proposed converting the most efficient local plants into International Production Centers (IPCs), each supplying many NOs. In so doing, van Reimsdijk hoped that PD managers would gain control over manufacturing operations, but implementation was difficult due to the political and organizational difficulty of closing local plants. By the end of the decade, several IPCs had been established, but the NOs seemed as powerful and independent as ever.

Dr. Rodenburg continued the thrust of van Reimsdijk's reforms, reinforcing the attempt to simplify control by replacing the dual commercial and technical leadership with single management at both the corporate and national organizational levels.

Wisse Dekker Reorganization, 1982

Unsatisfied with the company's slow response and concerned by its slumping financial performance, Wisse Dekker outlined a new global strategy upon becoming CEO in 1982. Aware of the cost advantage of Philips' Japanese counterparts, he created more IPCs and closed many small, inefficient plants, particularly in Europe. He was outspoken about the need to shift production out of the Netherlands and out of Europe, earning a reputation as a "Euro-pessimist." He insisted his objective was simply to create a sense of urgency. He focused on core operations by selling some businesses (e.g., welding, energy cables, and furniture) while acquiring an interest in Grundig and Westinghouse's North American lamp activities.

Philips also began to enter into more technology sharing agreements, including a joint venture with Control Data Corporation to develop an optical storage system for data and a cooperation agreement with RCA and Intel to produce certain integrated circuits. Dekker pushed alliances in off-shore manufacturing with the Beijing Radio Factory and in high-tech product development with companies such as AT&T, Toppan Printing, and Kyocera.

Dekker also continued his predecessor's initiative to replace dual leadership (commercial and technical) with single general managers. He tried to energize the management board by cutting the number of members, bringing on directors with strong operating experience, and creating subcommittees to deal with difficult issues. Finally, he continued to "tilt the matrix" by giving PDs formal product management responsibility while NOs were responsible for profits in their countries.

He created a Corporate Council composed of the heads of the NOs and PDs and with responsibility for coordinating strategy. He also redefined the product planning process to incorporate input from the NOs, but giving global PDs the final decisions about long-range product direction. Every spring, the 10 key NOs met with the Philips board of management to discuss their four-year plans. In April, the heads of the NOs and PDs met. Thereafter, PD heads made 4-year product plans within the strategic guidelines set by the board of management and one of the board's

steering committees. In October and November, the board met again with PD heads to discuss corporate strategic issues.²

Many of Dekker's changes resulted in a cultural shift within company. Gone were the Philips midwives, the Philips nursery schools, and the Philips doctors. In 1982, Dekker eliminated index-linked wages. While he was CEO, Philips laid off 36,000 workers and closed 40 factories in Europe alone.

Van der Klugt Reorganization, May 1987

Upon Dekker's retirement, the new chairman, Cor van der Klugt, tried to steer the company back toward an industry leadership position. Now number two in the industry behind Matsushita, Philips was one of only two non-Japanese consumer electronics companies in the world's top ten. Its profit margins of 1% to 2% lagged behind General Electric's 9% and its Japanese competitors' standard 4%. Van der Klugt made catching up with and beating the Japanese companies a top priority.

As Van der Klugt reviewed Philips' strategy, he designated various businesses as core (those that shared related technologies, had strategic importance, or were technical leaders) and non-core (stand-alone businesses that were not targets for world leadership and could eventually be sold if required). Of the four businesses defined as core, three were strategically linked: Elcoma (components manufacturing), Consumer Electronics, and Telecommunications and Data Systems. The fourth, Lighting, was regarded as strategically vital because its high profitability funded targeted development efforts. The non-core businesses included domestic appliances and medical systems. In 1987, Philips pooled its domestic appliances business with Whirlpool and reached an agreement to merge its medical systems business in a joint venture with General Electric Company of the UK.

Continuing efforts to strengthen the product divisions relative to the national organizations, van der Klugt restructured Philips around the four core global product divisions (rather than 14) and gave the PDs new stature in the management hierarchy. He then trimmed the management board, appointing the displaced board members, the heads of the global product divisions, and the heads of key functional divisions to a new Group Management Committee to take over the board's policy-making responsibility. Finally, he sharply reduced the 3,000 strong headquarters staff, reallocating many of them to the PDs.

To link PDs more directly to markets, van der Klugt sent the managers of many product *lines* (not divisions) to Philips' most competitive markets, where consumer tastes were sophisticated and where new ideas and technologies were being developed. For example, digital audio tape and electric shaver product lines were moved to Japan, whereas management of medical technology and domestic appliances was moved to the US.³

Globalizing product development and production efforts also required firmer control over NOs, especially North American Philips Corp. (NAPC). Although Philips had obtained a majority equity interest in its North American company after World War II, NAPC did not always respond to directives from the center. Referring to its much publicized choice of Matsushita's VHS video cassette format over its parent's V2000 format, NAPC's chairman said, "We made the best decisions for the parochial interests of our stockholders. They were not always parallel with those of Philips

²"Inside Europe's Giant Companies: Cultural Revolution at Philips," *Long Range Planning* 1984(4):17.

³*The Wall Street Journal*, October 27, 1987, p. 2.

worldwide.”⁴ To prevent replays of such experiences, in 1987 van der Klugt purchased the remaining 42% of NAPC for \$700 million.

Reflecting the growing sentiment among some managers that R&D was not market-oriented enough, van der Klugt halved spending on basic research to about 10% of total R&D. The head of R&D asserted that Philips should not be spending so much time “pondering the fundamental laws of nature,” but should be developing marketable products. To achieve this aim, research became the “direct responsibility of the businesses being supported by the research,” with each research lab focused on specific business areas (see Exhibit 1). In other changes, marketing staffers joined the laboratory team during final research stages, and researchers from the lab worked with product development engineers. Finally, Philips announced that after 5 to 8 years in the labs, researchers would be rotated into different business functions, occasionally to return and bring with them business awareness.⁵

Finally, van der Klugt continued the effort to build efficient, global-scale plants by closing 75 of the company’s 420 remaining plants. To cut costs, he also eliminated 38,000 of its 344,000 employees—21,000 through divesting businesses. Layoffs of white- and blue-collar workers alike further shook up the myth of lifetime employment at the company, though not without strong reactions: in one episode, 810 workers laid off from a Belgian stereo plant actually rioted.

Van der Klugt anticipated that all these restructurings would lead to a financial recovery by 1990. Unanticipated losses for that year, however—more than 4.7 billion Dutch guilder (\$2.2 billion)—provoked a class action law suit by angry American investors, who alleged that positive projections by the company had been misleading. In a surprise move, van der Klugt and half of the management board were replaced on May 14, 1990. (Exhibits 2 and 3 show the extent of Philips financial difficulties.)

Jan Timmer Reorganization, 1990

The new president, Jan Timmer, had spent many years abroad turning around unprofitable businesses within Philips and had led the consumer products division under van der Klugt. Having earned the nickname “the butcher of Eindhoven” for his cost-cutting in other parts of the company, Timmer announced lay-offs of 10,000 workers in July 1990, and, four months later, announced cuts of another 45,000 workers over 14 months. In addition to the job cuts, he vowed to “change the way we work”; he established new performance rules and asked hundreds of top managers to sign contracts that committed them to specific financial goals.⁶

The layoffs came slowly, however. Philips was required by law to pay 15 months’ salary as severance pay to Eindhoven workers and historically had paid middle managers three years’ severance pay. Consequently, the first round of 10,000 lay-offs alone cost Philips \$700 million and was expected to take 18 months.

To spread the burden of the needed layoffs, Timmer asked his PD managers to negotiate cuts with NO managers. According to one report, however, country managers were “digging in their heels to save jobs.” Because of the high cost of firing European workers, observers speculated that most of Timmer’s planned cuts would come in North America.⁷

⁴*Financial Times*, July 27, 1988, p. 8.

⁵*Business Week*, March 21, 1988, p. 156.

⁶*Business Week*, November 12, 1990, pp. 60-61

⁷*Business Week*, November 12, 1990, pp. 59-60.

Employee opinion about the layoffs was divided. Many older workers, who were accustomed to lifetime employment, did not accept Timmer's rationale: "Before, working for Philips was like being a civil servant," said one. "Your job was never at risk unless you really bungled it up." Other younger workers recognized that the layers within Philips were redundant. Remarked one employee with grudging respect: "The other times we were told 'this won't hurt a bit,' as if we were patients in a doctor's surgery. But the operation was never successful. This time, Mr. Timmer is saying it *will* hurt and that's at least realistic."⁸

In September 1990, he cancelled production of a key chip in which the company had invested more than one billion guilders since the mid-1980s. Philips also resigned as leader of the static random access memory chip project of the Joint European Submicron Silicon Initiative, a consortium of European electronics companies involved in more than 50 projects.

Although he remained committed to Philips' shrinking computer business, Timmer decided to refocus that business on proven market niches and reduce dependence on in-house development and assembly. Reminiscent of van der Klugt's decision to spin-off the non-core domestic appliances and medical technology businesses into joint ventures, he explored trading Philips' computing activities to Italy's Olivetti for an equity stake. The talks fell through, however, perhaps indicating that it would be difficult to find a buyer. One analyst argued that Philips had not come to terms with the market-driven nature of the computer business:

If Philips says it's still committed to the computer business then there's trouble ahead for the company. People just don't want the Dutch company's products. It's a market-driven rather than a research-driven business, and Philips is a research and development-driven company.⁹

The Challenge in 1990

In 1990, the Dutch Titan prepared for a comeback in the consumer electronics arena. It was an open question, however, whether it could parlay its traditional strength in local markets into renewed leadership while developing the capabilities it would need to face newly dominant Japanese competitors, such as Matsushita.

Matsushita: Background

In 1918, Konosuke Matsushita (or "KM" as he was affectionately known), a 23-year old inspector with the Osaka Electric Light Company, invested ¥100 to start production of double-ended sockets in his modest home. During the 1920s and early 1930s, the company grew rapidly, mostly from sales of battery-powered lamps, electric irons, and eventually, radios. A public offering in 1935 allowed Matsushita to diversify further into domestic fans, light bulbs, small motors, and a variety of domestic appliances. Soon the wave of new products became a flood: black and white TV sets in 1952; transistor radios in 1958; stereos, tape recorders, and air conditioners in 1958; driers and disposal units in 1959; color TVs, dishwashers and electric ovens in 1960. By 1968, Matsushita produced 5,000 products compared to Sony's 80.

Capitalizing on this broad product line, the company opened 25,000 domestic retail distribution outlets. With more than six times the number of outlets than rival Sony, the ubiquitous

⁸*Financial Times*, October 27, 1990.

⁹*Financial Times*, June 15, 1990.

"National Shops" represented about 40% of all appliance stores in Japan in the late 1960s. These not only provided assured sales volume, but also gave the company direct access to market trends and consumer product reaction.

When post-war growth slowed, however, Matsushita had to look beyond its expanding product line and excellent distribution system for growth. After trying many tactics to boost sales—even sending assembly line workers out as door-to-door salesmen—the company eventually focused on export markets.

Company Creed and the 250-Year Plan

On May 5, 1932, Matsushita's 14th anniversary, KM announced to his 162 employees a 250-year corporate plan broken into 25-year sections, each to be carried out by successive generations. His plan was codified in a company creed and in the "Seven Spirits of Matsushita" (see **Exhibit 4**), which, along with the company song, continued to be woven into morning assemblies worldwide. All white-collar employees received "cultural and spiritual training" during their first seven months with the company, studying KM's fuller philosophy which had evolved as he struggled to understand the firm's changing role in society. After training, employees were coached in applying KM's philosophy to their daily business and received regular reinforcement training. In the course of ongoing decision making, it was not uncommon to see Matsushita managers refer to the company creed, which they carried on a pocket card.

The Organization's Foundation: Divisional Structure

Plagued by ill health, KM wished to delegate more authority than was typical in Japanese companies; he thus introduced the divisional structure to Matsushita in 1933, making it the first Japanese company to adopt this form. This structure allowed easy identification of each division's performance through clearly defined profit responsibilities while creating a "small business" environment to maintain growth and flexibility.

Under its "one-product-one division" system, each product line was managed by a separate autonomous division to be operated almost like an independent corporation. Corporate management provided it with initial funds, which were credited to the divisional balance sheet as internal capital. Corporate management deliberately underestimated working capital requirements to motivate divisions to work hard and retain earnings. Divisional profitability was determined after deductions for central services such as R&D, and interest on internal borrowings within the company. KM expected uniform performance across the company's 36 divisions regardless of market maturity or competitive positions. Division managers whose operating profits fell below 4% of sales for two successive years were replaced.

Matsushita ran its corporate treasury like a commercial bank, taking deposits on excess funds and paying normal market interest. Transfer prices were based on the market and settled through the treasury on normal commercial terms. Each division paid 60% of earnings to headquarters and financed all additional working capital and fixed asset requirements from the retained 40%. The central finance department reviewed divisions' loan requests as a bank would. It also charged slightly higher-than-market interest, and insisted that loans be paid back promptly.

This divisional structure generated competition among divisions, spurring them to develop new products to provide growth. For example, when the radio division won out in an internal competition with the tape recorder division to produce radio-cassette recorders, the tape recorder division was left without a source of growth. In response, it created the novel *karaoke* machine, a dual-track recorder that allowed amateurs to sing with prerecorded musical accompaniment. The need to fund new product development also drove managers to maximize performance of existing products: the video division aggressively maximized color TV sales so it could fund VCR

development. After the innovating division had earned substantial profits on its new product, however, company policy was to spin it off as a new division to maintain the "hungry spirit."

The basic technology to support the divisions' innovation was developed in a central research laboratory (CRL), which conducted basic research. Product development and engineering occurred in each of the product divisions. Matsushita intentionally under-funded the CRL, which competed for additional funding from the divisions in order to support its R&D program. Annually, the CRL publicized its major research projects to the product divisions, which then provided the CRL with some funding in exchange for developing technology for marketable applications.

Matsushita: Internationalization

Upon returning from the United States in 1951, KM told managers that "to survive and to grow we have to become international not only in our operations but also in our outlook." Although the establishment of overseas markets was a major thrust of the second section of the 25-year plan, KM had been unable to find any American company willing to collaborate with Matsushita. He did formalize a technology exchange and licensing agreement with Philips, however, a relationship which later led to a joint venture in electronic components in Japan.

Expanding Through Color TV

Trade liberalization and the advent of containerization, supercargo ships, and lower shipping rates made possible a healthy export business built on black and white TV sets. In 1953, the company opened its first overseas branch office, in New York—the Matsushita Electric Corporation of America (MECA)—followed by other sales companies in the Americas and Southeast Asia.

With neither its dense "National Shops" distribution network nor a strong enough brand image abroad to get access to traditional retailers, Matsushita was forced to establish its products in the US through new mass merchandisers and discounters. Typically it sold its products under the merchandisers' private brands.

Although it originally produced most TVs in global-scale Japanese plants, during the 1960s, pressure from national governments in developing countries led Matsushita to open manufacturing facilities in several countries in Southeast Asia and Central and South America. As manufacturing costs in Japan rose, Matsushita shifted more basic production to these low-wage countries, but the vast majority of production still came from Japan.

In the 1970s, rising protectionist sentiments in the West threatened the economic viability of Matsushita's global-scale, centralized business. Exploding imports from Japan triggered antidumping suits in the West, and although it could have circumvented the quotas by supplying the U.S. from non-Japanese plants, the company decided to build a production base in the Americas and Europe. In 1972, it opened a plant in Canada; in 1974, it bought Motorola's TV business and started manufacturing its Quasar brand in the U.S.; and in 1976, it built a plant in Cardiff, Wales to supply the Common Market.

Building Global Leadership: Dominating through VCRs

The birth of the videocassette recorder (VCR) propelled Matsushita into first place in the consumer electronics industry during the 1980s. Recognizing the potential mass-market appeal of the VCR—developed by Californian broadcasting company, Ampex, in 1956—engineers at Matsushita (as well as its 50% owned subsidiary, JVC, and at Sony) began developing VCR technology. After six

years of development work, Matsushita launched its commercial broadcast video recorder in 1964, and introduced a consumer version two years later. But the product struggled to gain market acceptance and production at the new Okanyama plant—the first in the world dedicated solely to VCR production—was running at a small fraction of capacity.

In 1975, Sony introduced the technically superior “Betamax” format VCR, and the next year JVC launched a competing “VHS” format. Under pressure from MITI, Matsushita agreed to give up its own format and adopt the more popular VHS. Finally, after 20 years of losses, the Okanyama plant could be run “full and steady,” and VCR operations became profitable. During the 20 years of VCR product development, various members of the VCR research team had moved from central labs to the product divisions’ development labs and eventually to the plant as the task evolved from basic research to product development and engineering.

With fast-growing sales, Matsushita aggressively licensed the VHS format to other manufacturers, including Hitachi, Sharp, Mitsubishi and, eventually, Philips. It adopted an aggressive OEM policy to ensure that companies such as GE, RCA and Zenith were also locked into the VHS format on units they sourced from Japan and sold under their own brand name. Building “format volume” made VHS the industry standard and guaranteed future sales.

The company quickly built production volumes to accommodate worldwide demand, and between 1977 and 1985, capacity was increased 33-fold to 6.8 million units. Leveraging the distribution channels and brand names the company had established with earlier products (e.g., Panasonic, National), the new VCRs met with huge success abroad. Matsushita’s overseas sales growth increased a remarkable 52% in 1980 (from ¥764 billion to ¥1,164 billion), then by a further 35% in 1981 (to ¥1,575 billion). In 1985, VCR sales comprised an estimated 43% of overseas revenue. Increased volume enabled Matsushita to slash prices 50% within 5 years of product launch, while simultaneously improving quality on several carefully monitored dimensions. By the mid-1980s, VCRs accounted for 30% of sales and provided 45% of profits.

Matsushita: Managing International Operations

Organizational Evolution

Until the mid-1980s, the company managed its overseas companies through three groups: wholly-owned, single product global plants reported directly to Matsushita’s product divisions; multiproduct sales and manufacturing subsidiaries producing a broad product line for local markets reported to Corporate Overseas Management (COM) in corporate headquarters; and finally, overseas sales and marketing subsidiaries importing their products from Japan and other global production centers reported to Matsushita Electric Trading Company (METC), the separate company created in 1935 to manage the company’s growing exports. (The US sales companies, however, reported to COM.)

In 1985, the COM staff of 120 was merged into the 1,500-person METC organization (Exhibit 5). In addition to uniting Matsushita’s overseas strategy, the purpose of the change was to speed up decision making, decrease overall corporate costs, and better integrate overseas sales and marketing operations.

Changing Systems and Controls

Well into the 1970s, the central product divisions maintained strong operating control over offshore production units. Overseas operations used plant and equipment designed by the parent

company, followed manufacturing procedures dictated by the center, and used materials from Matsushita's domestic plants. Growing trends toward local sourcing and independence, however, gradually weakened the divisions' direct control. Instead of controlling inputs, they began to monitor output on a variety of dimensions (e.g., quality, productivity, inventory levels).

Moreover, Matsushita's tight administrative systems and controls that were central to domestic operations had not been transferred to the overseas companies with the same rigor. ROI measures were meaningless because overseas companies were financed by the parent company, and the profit center concept was undermined by the fact that the divisions received only a cost-based transfer price and a modest 3% royalty. Performance in overseas companies was measured on sales and market share.

In the late 1970s, however, sales and profit numbers began to be compiled and reviewed on a worldwide basis, and by the early 1980s, product divisions were receiving the globally consolidated return on sales reports that had previously been consolidated in METC statements. About the same time, the company introduced medium-term planning as a means of counter-balancing the short-term perspective created by the company's financial systems. Eventually, the scope of these plans evolved to include worldwide planning and, by the mid-1980s, corporate management required divisions to prepare global product strategies.

Headquarters-Subsidiary Relations

Although parent company units set detailed sales and profits targets for their overseas subsidiaries, local managers were told they had complete autonomy on how to achieve the targets. "Mike" Matsuoko, president of the company's largest European production subsidiary in Cardiff, Wales, however, emphasized that failure to meet targets forfeited freedom: "Losses show bad health and invite many doctors from Japan who provide advice and support."

Matsushita had over 700 expatriate managers and technicians on foreign assignment for four to eight years, but defended that high number by describing the pivotal role they played in communication. "This communication role," said one manager, "almost always requires a manager from the parent company. Even if a local manager speaks Japanese, he would not have the long experience that is needed to build relationships and understand our management processes."

Expatriate managers were located throughout foreign subsidiaries, but there were a few management positions that were almost always reserved for them. The most visible were subsidiary general managers whose main role was to translate Matsushita philosophy abroad. Expatriate accounting managers were expected to "mercilessly expose the truth" to corporate headquarters; and Japanese technical managers were sent to transfer product and process technologies and provide headquarters with local market information. These expatriates maintained relationships with senior colleagues at headquarters who acted as career mentors, evaluated performance (with some input from local managers), and provided expatriates with information about developments at the parent company.

General managers of foreign subsidiaries visited headquarters at least two or three times each year—some as often as every month. Corporate managers reciprocated these visits, and on average, major operations hosted at least one headquarters manager each day of the year. Face-to-face meetings were considered vital: "Figures are important," said one manager, "but the meetings are necessary to develop judgment." Faxes and after-hour phone calls between headquarters and expatriate colleagues were a vital management link.

In the mid-1980s, offshore production subsidiaries gained some flexibility. They were free to buy minor parts from local vendors as long as quality could be assured, but still had to buy key components from internal sources. Subsidiaries now carried out routine production tasks

independently, calling on corporate technical personnel when plans called for major expansion or change. Similarly, sales subsidiaries had some choice over the products they sold. Each year the company held a two-week internal merchandising show and product planning meeting, where sales subsidiary managers negotiated over features, quantities, and even prices of the products they wanted to buy from the parent's product divisions. Corporate managers, however, could overrule the subsidiary if they thought introduction of a particular product was strategic.

New Challenges, New Responses

In 1986, a rapidly appreciating yen cut Matsushita's exports by a fifth, reminding managers of the dangers of Matsushita's exchange rate exposure. The financial impact of the strengthening yen was cushioned by "The Matsushita Bank Effect:" in 1986, dividend and interest income from Matsushita's cash hoard contributed almost 10% of pretax profits, obscuring a steady decline in operating margins from the second quarter of 1985 (see Exhibit 6). Company president Yamashita was particularly conscious of Matsushita's dependence on VCR sales, which provided more than one-third of the company's 1985 sales, as well as its vulnerability in its export business which now accounted for half the company's sales—total color TV sales fell 30% and VCR sales fell 19%.) In response, he initiated two programs—the "ACTION"¹⁰ program aimed at reducing dependence on the VCR and other consumer products, and "Operation Localization" aimed at internationalizing all aspects of Matsushita's business (see Exhibit 7).

Strategic Redirection at Home

In 1979, the first ACTION program added several new targeted areas to Matsushita's more traditional businesses, including semiconductors, robots, computers, and other instruments for factory and office automation. These businesses were to be added without changing existing division lines. The complexity and size of the task required renewal of the initiatives in 1983 as the so-called "ACTION '86" plan. The objective was to increase sales of Matsushita's non-consumer electronics business by 20% per year, to 39% of the group's total by 1986. The plan refocused the company in four new and growing sectors: office automation (computers, peripherals, telephones, and facsimiles), new audiovisual (high definition television, liquid crystal and digital TV), industrial equipment (electric motors, robots, air conditioning), and electronic components (including semiconductors and electric lamps).

Operation Localization

In 1982, Yamashita launched "Operation Localization" to boost offshore production from less than 10% of value added to 25%, or half of overseas sales, by 1990. He set out a program of four localizations—personnel, technology, material, and capital—to support the target. To localize personnel, Matsushita increased the number of local nationals in key positions over the next few years. In the US, for example, three of the six company presidents reporting to the CEO of MECA were Americans. In Taiwan, the majority of production divisions were replaced by Chinese managers. In each case, however, local national managers were still supported by senior Japanese advisors who maintained a direct link with the parent company. To localize technology and material, the company developed its national subsidiaries' expertise to source equipment locally, modify designs to meet local requirements, and incorporate local components, and adapt corporate processes and technologies to accommodate these changes while maintaining the company's quality standards.

¹⁰ACTION was an acronym for Act immediately, Cost reduction, Topical products, Imaginative marketing, Organizational revitalization, and New management strength.

Finally, to localize capital between 1985 and 1988, Matsushita added production facilities in the US for VCRs and car audio equipment; in the UK for microwave ovens, printers, and electronic typewriters; in France for hi-fi tuners and VCRs; in Spain for VCRs; and in Asia for motors, air conditioner compressors, TVs and facsimiles.

Between 1980 and 1988, Matsushita added 21 manufacturing companies and 12 sales companies abroad to bring those respective totals to 60 and 41. In 1980, Matsushita employed 30,000 workers overseas; that total rose to about 52,000 workers in 1988 and 59,000 in 1990. Despite these efforts, in 1988 overseas production stood at only \$3.5 billion—still less than half Matsushita's 25% target.

President Yamashita had also hoped that through these efforts, Matsushita's overseas companies would develop more of the innovative capability and entrepreneurship that he had long admired in the national organizations of rival Philips. Past efforts to develop technological capabilities abroad had failed due to the company's highly centralized R&D structure in Japan. For example, when Matsushita acquired Motorola's TV business in the United States, its highly innovative R&D group atrophied as American engineers resigned in response to what they felt to be excessive functional control from Japan.

Despite the localization programs, however, the company had difficulty creating the kind of local flexibility, creativity, and entrepreneurship that Yamashita had wished for. In an unusual act for a Japanese CEO, Yamashita publicly expressed his unhappiness with the lack of initiative at the TV plant in Cardiff. Despite the transfer of substantial resources and the delegation of many responsibilities, he felt that the plant remained too dependent on the center. Yamashita wanted to see it become more innovative and self-sufficient.

Because Matsushita's product divisions received only 3% royalties for foreign production against at least 10% return on sales for exports from Japan, management felt the domestic divisions were not giving their full attention to developing operations outside Japan. In 1986, all foreign subsidiaries of Matsushita were brought under the control of METC, thus consolidating the company's international operations in one administrative entity.

The overall localization thrust was not without opposition. Some subsidiary managers feared it would reduce their access to central resources and expertise. If localized operations caused export income to contribute less, they reasoned, the central product division managers could give priority to domestic needs over foreign operations. And, in the low-growth environment, increased foreign production would come at the expense of export sales. "What will that mean for employment in Japan?" said one senior manager. "Protecting the interests of employees is one of our greatest moral commitments. We cannot sacrifice that for any reason."

Despite these misgivings, the company was committed to expanding manufacturing outside Japan and to further integrating domestic and overseas operations. In April 1988, METC was merged into the parent company in an effort to improve internal communication, global customers service, and efficient distribution. Later in 1988, Matsushita relocated its operational control nearer to local markets. Major regional headquarters functions were shifted from Japan to North America, Europe, and Southeast Asia.

In 1990, Matsushita launched an Action Plan for International Cooperation "to promote globalization and correct trade imbalances." By 1994, Matsushita's new president, Akio Tanii, hoped to produce half of Matsushita's foreign sales overseas and to double company imports into Japan. Finally, Matsushita appointed an American to head its main American subsidiary.

Philips and Matsushita in 1990

At the end of 1990, it was clear that Matsushita's and Philips' traditional strategies and organizations were not serving them well. Matsushita had been unable to restore its profits to 1985 levels, when the strong yen, protectionist pressures, and dependence on a few types of products had cast doubt on the company's traditional global strategy. Philips' financial situation was worse—operating income had fallen 27% since 1985. In 1990, observers questioned whether the companies' leaders had taken the right steps to revitalizing their businesses, what further actions were needed, and how the leaders ought to implement their plans.

Exhibit 1 Philips Research Labs by Location and Specialty, 1987

Location	Size (staff)	Specialty
Eindhoven, The Netherlands	2,000	Basic research, electronics, manufacturing technology
Redhill, Surrey, England	450	Microelectronics, television, defense
Hamburg, Germany	350	Communications, office equipment, medical imaging
Aachen, W. Germany	250	Fiber optics, X-ray systems
Paris, France	350	Microprocessors, chip materials and design
Brussels	50	Artificial intelligence
Briarcliff Manor, New York	35	Optical systems, television, superconductivity, defense
Sunnyvale, California	150	Integrated circuits

Source: Philips, in *Business Week*, March 21, 1988, p. 156.

Exhibit 2 Philips Group Summary Financial Data, 1985-1990 (millions of guilders unless otherwise stated)

	1990	1989	1988	1987	1986	1985	1980	1975	1970
Net sales	f 55,764	f 57,224	f 56,079	f 52,715	f 55,037	f 60,045	f 36,536	f 27,115	f 15,070
Income from operations (excl. restructuring)	2,260	2,634	2,904	2,690	3,489	3,075	1,577	1,201	1,280
Income from operations	-2,389	2,294	2,428	2,175	3,194	3,075	1,577	1,201	1,280
As a percentage of net sales	-4.3%	4.0%	4.3%	4.1%	5.8%	5.1%	4.3%	4.5%	8.5%
Income after taxes	f -4,447	f 746	f 494	f 538	f 1,133	f 1,025	f 532	f 341	f 446
Net income from normal business operations	-4,526	792	531	539	959	n/a	328	347	435
As a percentage of stockholders' equity	-30.2%	8.2%	6.6%	5.2%	6.3%	5.6%	2.7%	3.6%	7.3%
Distribution per common share, par value f 10 (in guilders)	f 0.0	f .00	f 2.00	f 2.00	f 2.00	f 2.00	f 1.80	f 1.40	f 1.70
Stockholders' equity (common)	11,165	16,888	16,540	15,514	15,858	16,151	12,996	10,047	6,324
Other group capital	2,052	2,221	2,253	2,298	2,479	2,430			
Group equity	13,217	19,109	18,793	17,812	18,337	18,581			
Stockholders' equity per common share, par value f 10 (in guilders)	37.69	61.09	64.16	60.78	68.20	71.30	75.80	59.02	52.11
Total assets	51,595	54,979	52,849	49,939	50,630	52,883	39,647	30,040	19,088
Inventories as a percentage of net sales	20.7%	22.4%	24.1%	22.9%	23.3%	23.2%	32.8%	32.9%	35.2%
Outstanding trade receivables in month's sales	1.6	1.9	1.9	1.9	2.0	2.0	3.0	3.0	2.8
Current ratio	1.4	1.4	1.5	1.5	1.5	1.6	1.7	1.8	1.7
Employees at year-end (in thousands)	f 273	f 305	f 310	f 337	f 344	f 346	f 373	f 397	f 359
Wages, salaries and other related costs	17,582	19,061	19,526	19,126	19,755	21,491	15,339	11,212	5,890
Exchange rate (period end; guilder/\$)	1.69	1.91	2.00	1.77	2.17	2.75	2.15	2.69	3.62
Selected data in millions of dollars:									
Sales	\$ 33,018	\$ 29,985	\$ 28,011	\$ 29,831	\$ 25,334	\$ 21,802	\$ 16,993	\$ 10,098	\$ 4,163
Operating income before deprec.	3,566	2,869	2,663	2,865	2,559	2,257	1,489	922	NA
Operating profit	1,247	1,067	983	1,052	1,120	988	734	464	NA
Pretax income	-2,380	763	466	599	903	658	364	256	NA
Net income	-2,510	720	527	463	467	334	153	95	120
Total assets	30,549	28,809	26,398	28,260	23,305	19,202	18,440	11,186	5,273
Shareholders' equity (common)	6,611	8,849	8,262	8,779	7,299	5,864	6,044	3,741	1,747

Source: Annual reports; Standard & Poors' Compustat, Moody's Industrial and International Manuals.

Exhibit 3 Philips Group, Sales by Product and Geographic Segment, 1985-1990 (million guilders)

	FY 1990	FY 1989	FY 1988	FY 1987	FY 1986	FY 1985
Net Sales by Product Segment:						
Lighting	f 7,026	f 7,521	f 6,974	f 6,557	f 6,842	f 7,976
Consumer electronics	25,400	23,518	25,287	16,793	17,040	16,906
Domestic appliances				6,333	6,295	6,644
Professional products				14,653	16,037	17,850
Components	13,059	15,751	15,359	10,807	11,245	11,620
Miscellaneous	8,161	8,473	11,199	1,796	2,160	3,272
	2,118	1,961	1,396	3	4	5
Total	f 55,764	f 57,224	f 60,215	f 56,939	f 59,619	f 64,266
Intercompany deliveries	0	0	(4,136)	(4,244)	(4,582)	(4,233)
Net sales	f 55,764	f 57,224	f 56,079	f 52,695	f 55,037	f 60,035
Operating Income by Sector:						
Lighting	NA	f 763	f 777	f 620	f 540	f 910
Consumer electronics	NA	1,105	827	415	720	34
Domestic appliances	NA			329	232	397
Professional products	NA	40	368	612	1,153	1,484
Components	NA	(125)	353	92	263	44
Miscellaneous	NA	163	115	142	298	200
Increase not attributable to a sector	NA	348	(12)	(35)	(12)	6
Total	NA	f 2,294	f 2,428	f 2,175	f 3,194	f 3,075
		100%	100%	100%	100%	100%

Source: Annual reports

Notes:

Totals may not add due to rounding.

Product sector sales between 1988 and 1990 are external sales only, therefore no eliminations are made; sector sales before 1988 include sales to other sectors, therefore eliminations are made.

Data are not comparable to six-year financial summary due to restating.

Exhibit 4 Matsushita Creed and Philosophy (Excerpts)

Creed

Through our industrial activities, we strive to foster progress, to promote the general welfare of society, and to devote ourselves to furthering the development of world culture.

Seven Spirits of Matsushita

Service through Industry
Fairness
Harmony and Cooperation
Struggle for Progress
Courtesy and Humility
Adjustment and Assimilation
Gratitude

KM's Business Philosophy (Selected Quotations)

"The purpose of an enterprise is to contribute to society by supplying goods of high quality at low prices in ample quantity."

"Profit comes in compensation for contribution to society. . . . [It] is a result rather than a goal."

"The responsibility of the manufacturer cannot be relieved until its product is disposed of by the end user."

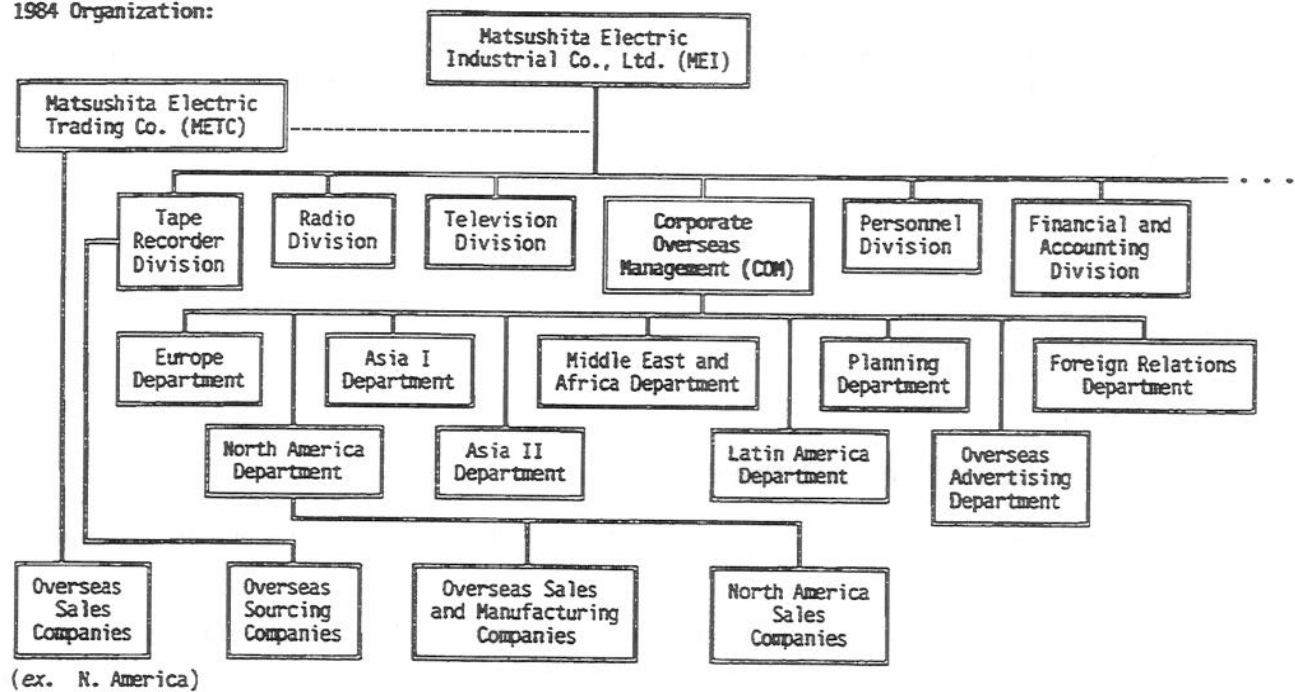
"Unsuccessful business employs a wrong management. You should not find its causes in bad fortune, unfavorable surroundings or wrong timing."

"Business appetite has no self-restraining mechanism. . . . When you notice you have gone too far, you must have the courage to come back."

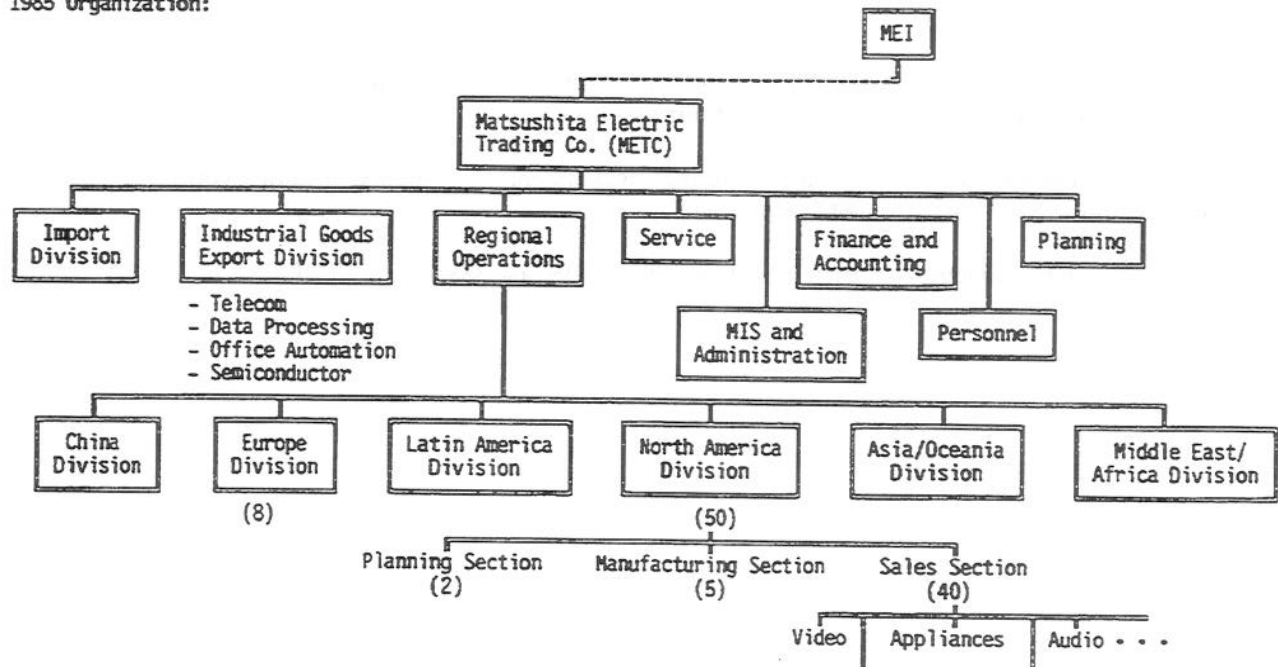
Source: "Matsushita Electric Industrial (MEI) in 1987," HBS case 388-144.\RETURN\

Exhibit 5 Changes in Matsushita's Headquarters Organization for International Companies

1984 Organization:



1985 Organization:



Source: HBS case no. 388-144.

Note: () = number of people.

Exhibit 6 Matsushita, Summary Financial Data, 1985-1990 (- billions, except for per share and employee data)

	FY 3/31/90	FY 3/31/89	FY 3/31/88	1987 ^a	FY 11/30/86	FY 11/30/85	FY 11/30/80	FY 11/30/75	FY 11/30/70
In billions of yen and percent:									
Sales	¥ 6,003	¥ 5,504	¥ 5,067	¥ 1,572	¥ 4,711	¥ 5,291	¥ 2,916	¥ 1,385	¥ 932
Income before tax	572	529	453	139	467	723	324	83	147
As % of sales	9.5%	9.6%	8.9%	8.8%	9.9%	13.7%	11.1%	6.0%	15.8%
Net income	¥ 236	¥ 213	¥ 165	¥ 49	¥ 168	¥ 216	¥ 125	¥ 32	¥ 70
As % of sales	3.9%	3.9%	3.2%	3.1%	3.6%	4.1%	4.3%	2.3%	7.6%
Cash dividends (per share)	¥ 10.00	¥ 11.90	¥ 8.52	¥ 3.81	¥ 9.52	¥ 9.52	¥ 7.51	¥ 6.82	¥ 6.21
Total assets	7,851	6,402	5,708	4,832	5,019	5,076	2,479	1,274	735
Stockholders' equity	3,201	2,867	2,490	2,230	2,188	2,084	1,092	573	324
Capital investment	355	325	229	66	205	288	NA	NA	NA
Depreciation	238	218	195	75	207	227	65	28	23
R&D	346	319	279	95	258	248	102	51	NA
Employees (units)	198,299	193,088	185,416	180,570	181,453	175,828	107,057	82,869	78,924
Overseas employees	59,216	56,915	49,796	44,642	43,755	38,380	NA	NA	NA
As % of total employees	30%	29%	27%	25%	24%	22%	NA	NA	NA
Exchange rate (fiscal period end; ¥/\$)	159	132	131		168	213	213	303	360
In millions of dollars:									
Sales	\$ 37,753	\$ 41,699	\$ 38,552		\$ 28,067	\$ 24,890	\$ 13,690	\$ 4,572	\$ 2,588
Operating income before deprec.	4,343	4,810	3,520		2,926	3,682	1,606	317	NA
Operating income after deprec.	2,847	3,160	2,298		1,913	2,764	1,301	224	NA
Pretax income	3,667	4,099	3,450		2,706	3,396	1,520	273	408
Net income	1,482	1,617	1,303		1,004	1,214	584	105	195
Total assets	49,379	48,499	38,731		26,826	21,499	11,636	4,206	2,042
Total equity	20,131	21,716	19,818		13,321	10,153	5,129	1,890	900

Notes: Data for 1985-1986 are for the fiscal year ending November 20; data for 1988-1990 are for the fiscal year ending March 31; data for 1987 are for the 4 months and 11 days ending March 31, 1987.

Source: Annual reports; Standard & Poors' *Compustat*; Moody's Industrial and International Manuals.

Exhibit 7 Matsushita, Sales by Product and Geographic Segment, 1985-1990 (billion yen)

	FY 1990		FY 1989		FY 1988		FY 1987 ^a		FY 1986		FY 1985	
By Product Segment:												
Video equipment	¥1,598	27%	¥1,568	28%	¥1,498	30%	¥ 532	34%	¥1,560	32%	¥1,947	37%
Audio equipment	561	9	515	9	507	10	163	10	507	11	570	11
Home appliances	802	13	777	14	755	15	213	14	738	15	763	14
Communication and industrial equipment	1,375	23	1,104	20	958	19	278	18	828	17	849	16
Electronic components	781	13	726	13	637	13	196	12	563	12	573	11
Batteries and kitchen-related equipment	312	5	283	5	258	5	82	5	232	5	217	4
Others	573	10	530	10	455	9	108	7	383	8	372	7
Total	¥6,003	100%	¥5,504	100%	¥5,067	100%	¥1,572	100%	¥4,811	100%	¥5,291	100%
By Geographic Segment:												
Domestic	¥3,382	56%	¥3,207	58%	¥2,966	59%	¥ 858	55%	¥2,669	55%	¥2,659	50%
Overseas	2,621	44	2,297	42	2,101	41	714	45	2,142	45	2,632	50

Source: Annual reports

Notes: Total may not add due to rounding.

^aFor 1988-1990, fiscal year ends March 31; for 1985-1986, fiscal year ends November 31; 1987 reflects 4 months and 11 days between FY end 1986 and April 1, 1987.

Organizing for Worldwide Effectiveness: The Transnational Solution

Christopher A. Bartlett Sumantra Ghoshal

The enormous success of Japanese companies that burst into the international competitive arena in the 1960s and 1970s has triggered a barrage of analysis and advice in the Western business press. Most of this analysis highlighted the convergence of consumer preferences worldwide, the impact of changing technologies and scale economies on international industry structures, and the emergence of increasingly sophisticated competitive strategies that have led to a rapid process of globalization in a large number of worldwide businesses.¹

As Western companies have searched for the source of the newcomers' incredible ability to sell everything from automobiles to zippers, one conclusion has gained increasing credibility: companies that are unable to gain firm strategic control of their worldwide operations and manage them in a globally coordinated manner will not succeed in the emerging international economy. There are few senior managers in the West who are unaffected by the implications of this message.

The concerns of top managers in Japan, however, have been quite different and have focused on the forces of localization that have also been gathering strength in the recent past. Like their Western counterparts, they have been sensitized not only by their own experiences, but also by stories in the Japanese business press, which have been focused on the growing barriers to trade and, most recently, the impact of a strengthening yen in offsetting the efficiencies of global-scale Japanese plants. These managers are much more sensitive to the flip side of globalization—the growing demand of host governments for local investments, the building resistance of consumers to standardized homogenized global products, and the changing economics of emerging flexible manufacturing technologies that are making smaller-scale production and more tailored products feasible.

In the course of a study of some of the world's leading Japanese, European, and American multinationals, we found that these globalizing and localizing forces are working simultaneously to transform many industries.² But for historical reasons, few companies have built the organizational capabilities to respond equally to both of these forces.

Many of the European- and American-based companies had well-established networks of fairly independent and self-sufficient national subsidiaries —“decentralized federations” we call them. Those with such organizations had little difficulty in responding to the increased demands from their host governments or adapting to shifts in consumer preferences worldwide, and their strategic posture was often literally multinational—multiple national positions, each highly sensitive to its local market. The problem with this strategy and the organizational structure that supported it was that it was difficult to coordinate and control these worldwide operations in order to respond to the global forces.

Most of the Japanese companies we studied had the opposite problem. Their operations tended to be concentrated in the home country—we term them “centralized hubs”—and this gave them the ability to capture the opportunities presented by the global forces. Indeed, the strategic posture of these companies was literally global—the world was considered as an integrated whole. Such an approach made these companies less successful in building worldwide operating units that were sensitive and responsive to the countervailing forces of localization.³

Today's operating environment in many worldwide businesses demands more than efficient central management and flexible operations.

The Constraint of a Company's Heritage

As the international operating environment became more complex over the past decade or so, the great temptation for companies was to try to imitate the organizational characteristics and strategic postures of their competitors. For example, in the United States, multinational managers are being advised to “rein in far-flung autonomous subsidiaries, produce standardized global products, and pull decision-making power back to the home office,” with the reminder that “this is a formula that, not coincidentally, many Japanese companies have used for years.”⁴

But the appropriate response to the developing international demands cannot be captured in a formula—and certainly not one that is imitative of

companies in totally different situations. The problem is that while a company's tasks are shaped by its external environment, its ability to perform those tasks is constrained by what we term its "administrative heritage"—the company's existing configuration of assets, its traditional distribution of responsibility, and its historical norms, values, and management style.⁵ This internal organizational capability is something that cannot be changed overnight or by decree, and one of the important lessons for management is to shift its attention from a search for the ideal organization structure to a quest for ways in which to build and leverage the company's existing capabilities to make them more responsive to the ever-changing external demands.

That is not to deny that there are lessons to be learned from other companies—indeed our research indicates quite the opposite. However, the important lesson is that either blind imitation simply to eliminate obvious differences or wholesale adoption of another company's organizational approach or strategic posture is likely to end in failure. In the first part of this article, we distill some of the important transferable lessons that *can* be learned from companies that manage global coordination effectively and from those that have been most successful in developing and managing a responsive and flexible localized approach. Although the lessons are drawn from a broader study, we will emphasize the importance of a company's administrative heritage by comparing and contrasting the approaches of two leading consumer electronics companies and suggesting ways in which they can learn from each other.

But while such lessons are helpful, they do not provide the full solution. Today's operating environment in many worldwide businesses demands more than efficient central management and flexible local operations—it requires companies to link their diverse organizational perspectives and resources in a way that would allow them to leverage their capabilities for achieving global coordination and national flexibility simultaneously. In response to this need, a few companies have evolved beyond the simpler multinational or global approach to international business and developed what we term a *transnational* capability—an ability to manage across boundaries.⁶ In the final part of the article, we will describe some of the characteristics of such an organization, and will suggest some steps that can be taken to build these capabilities.

Making Central Management Flexible: Lessons from Matsushita

For companies that expanded internationally by establishing fairly independent and self-sufficient subsidiary companies around the world, the task of imposing some kind of global direction or achieving some measure of coordination of activity is often a Herculean challenge. The problem that has confronted successive generations of top management at Philips is typical. The Dutch-based electronics giant has built a justifiable reputation as one

of the world's most innovative companies, yet has continually been frustrated in its attempt to deliver its brilliant inventions to the world's markets. The recent failure of its VCR system is a classic example.

Despite the fact that it was generally acknowledged to be technologically superior to the competitive VHS and Beta formats, the Philips V2000 system failed because the company was unable to commercialize it. Within the company there is no shortage of theories to explain the failure: some suggest that those who developed the product and its competitive strategy were too distant from the market; others feel the barriers between research, development, manufacturing, and marketing led to delays and cost overruns; and another group points to the fact that worldwide subsidiaries were uninvolved in the project and therefore uncommitted to its success. All these explanations reflect organizational difficulties and have some element of truth.

On the other hand, Matsushita Electric Company, Philips' archrival in consumer electronics, has built the global leadership position of its well-known Panasonic and National brands on its ability to control its global strategy from the center in Japan—yet it has been able to implement it in a flexible and responsive manner throughout its worldwide operations. As we tried to identify the organizational mechanisms that were key to Matsushita's ability to provide strong central direction and control without becoming inflexible or isolated, three factors stood out as the most important explanations of its outstanding success:

- gaining the input of subsidiaries into its management processes;
- ensuring that development efforts were linked to market needs; and
- managing responsibility transfers from development to manufacturing to marketing.

By examining how these core mechanisms work in Matsushita, managers in other companies may see ways in which they can gain more global coordination without compromising local market sensitivity.

Gaining Subsidiary Input: Multiple Linkages—The two most important problems facing a centrally managed multinational company are that those developing the new product or strategy may not understand market needs or that those required to implement the new direction are not committed to it. Matsushita managers are very conscious of these problems and spend much time building multiple linkages between headquarters and overseas subsidiaries to minimize their impacts. These linkages are designed not only to give headquarters managers a better understanding of country level needs and opportunities, but also to give subsidiary managers greater access to and involvement in headquarters decision-making processes.

Matsushita recognizes the importance of market sensing as a stimulus to innovation and does not want its centrally driven management process to

reduce its environmental sensitivity. Rather than trying to limit the number of linkages between headquarters and subsidiaries or to focus them through a single point (as many companies do for the sake of efficiency), Matsushita tries to preserve the different perspectives, priorities, and even prejudices of its diverse groups worldwide and tries to ensure that they have linkages to those in the headquarters who can represent and defend their views.

The organizational systems and processes that connect different parts of the Matsushita organization in Japan with the video department of MESA, the U.S. subsidiary of the company, illustrate these multifaceted interlinkages. The vice president in charge of this department has his career roots in Matsushita Electric Trading Company (METC), the organization with overall responsibility for Matsushita's overseas business. Although formally posted to the United States, he continues to be a member of the senior management committee of METC and spends about a third of his time in Japan. This allows him to be a full member of METC's top management team that approves the overall strategy for the U.S. market. In his role as the VP of MESA, he ensures that the local operation effectively implements the agreed video strategy.

At the next level, the general manager of MESA's video department is a company veteran who had worked for 14 years in the video product division of Matsushita Electric, the central production and domestic marketing company in Japan. He maintains strong connections with the parent company's product division and is its link to the local American market. Two levels below him, the assistant product manager in the video department (one of the more junior-level expatriates in the American organization) links the local organization to the central VCR factory in Japan. Having spent five years in the factory, he acts as the local representative of the factory and handles all day-to-day communication with factory personnel.

None of these linkages is accidental. They are deliberately created and maintained and they reflect the company's open acknowledgement that the parent company is not one homogeneous entity, but a collectivity of different constituencies and interests, each of which is legitimate and necessary. Together, these multiple linkages enhance the subsidiary's ability to influence key headquarters decisions relating to its market, particularly decisions about product specifications and design. The multiple links not only allow local management to reflect its local market needs, they also give headquarters managers the ability to coordinate and control implementation of their strategies and plans.

Linking Direction to Needs: Market Mechanisms—Matsushita's efforts to ensure that its products and strategies are linked to market needs does not stop at the input stage. The company has created an integrative process that ensures that the top managers and central staff groups are not sheltered from the pressures, constraints, and demands felt by managers on the front line of the operations. One of the key elements in achieving this difficult organi-

zational task is the company's willingness to employ "market mechanisms" for directing and regulating the activities located at the center. Because the system is unique, we will describe some of its major characteristics.

Research projects undertaken by the Central Research Laboratories (CRL) of Matsushita fall into two broad groups. The first group consists of "company total projects" which involve developing technologies important for Matsushita's long-term strategic position and that may be applicable across many different product divisions. Such projects are decided jointly by the research laboratories, the product divisions, and top management of the company and are funded directly by the corporate board. The second group of CRL research projects consists of relatively smaller projects which are relevant to the activities of particular product divisions. The budget for such research activities, approximately half of the company's total research budget, is allocated not to the research laboratories but to the product divisions. This creates an interesting situation in which technology-driven and market-led ideas can compete for attention.

Each year, the product divisions suggest research projects that they would like to sponsor and which would incorporate their knowledge of worldwide market needs developed through their routine multiple linkages to subsidiaries. At the same time, the various research laboratories hold annual internal exhibitions and meetings and also write proposals to highlight research projects that they would like to undertake. The engineering and development groups of the product divisions mediate the subsequent contracting and negotiation process through which the expertise and interests of the laboratories and the needs of the product divisions are finally matched. Specific projects are sponsored by the divisions and are allocated to the laboratories or research groups of their choice, along with requisite funds and other resources.

The system creates intense competition for projects (and the budgets that go with them) among the research groups, and it is this mechanism that forces researchers to keep a close market orientation. At the same time, the product divisions are conscious that it is their money that is being spent on product development and they become less inclined to make unreasonable or uneconomical demands on R&D.⁷

The market mechanism also works to determine annual product styling and features. Each year the company holds what it calls merchandising meetings, which are, in effect, large internal trade shows. Senior marketing managers from Matsushita's sales companies worldwide visit their supplying divisions and see on display the proposed product lines for the new model year. Relying on their understanding of their individual markets, these managers pick and choose among proposed models, order specific modifications for their local markets, or simply refuse to take products they feel are unsuitable. Individual products or even entire lines might have to be redesigned as a result of input from the hundreds of managers at the merchandising meeting.

Managing Responsibility Transfer: Personnel Flows—Within a national subsidiary, the task of transferring responsibility from research to manufacturing and finally marketing is facilitated by the smaller size and closer proximity of the units responsible for each stage of activity. This is not so where large central units usually take the lead role, and Matsushita has built some creative means for managing these transitions. The systems rely heavily on the transfer of people, as is illustrated by the company's management of new product development.

First, careers of research engineers are structured so as to ensure that most of them spend about five to eight years in the central research laboratories engaged in pure research, then they spend another five years in the product divisions in applied product and process development, and finally they spend the rest of their working lives in a direct operational function, usually production, wherein they take up line management positions. More important, each engineer usually makes the transition from one department to the next along with the transfer of the major project on which he has been working.

The research project that began Matsushita's development of its enormously successful VCR product was launched in the late 1950s under the leadership of Dr. Hiroshi Sugaya, a young physicist in the company's Central Research Laboratory. As the product evolved into its development stage, the core members of Dr. Sugaya's team were kept together as they transferred from CRL to the product development and applications laboratory located in the product division. After a long and difficult development process, the product was finally ready for commercial production in 1977, and many of the team moved with the project out into the Okanyama plant.⁸

In other companies we surveyed, it was not uncommon for research engineers to move to development, but not with their projects, thereby depriving the companies of one of the most important and immediate benefits of such moves. We also saw no other examples of engineers routinely taking the next step of actually moving to the production function. This last step, however, is perhaps the most critical in integrating research and production both in terms of building a network that connects managers across these two functions, and also for transferring a set of common values that facilitates implementation of central innovations.

Another mechanism that integrates production and research in Matsushita works in the opposite direction. Wherever possible, the company tries to identify the manager who will head the production task for a new product under development and makes him a full-time member of the research team from the initial stage of the development process. This system not only injects direct production expertise into the development team, but also facilitates transfer of the innovation once the design is completed. Matsushita also uses this mechanism as a way of transferring product expertise

from headquarters to its worldwide sales subsidiaries. Although this is a common practice among many multinationals, in Matsushita it has additional significance because of the importance of internationalizing management as well as its products.

As with the multiple linkages and the internal market mechanisms, this organizational practice was a simple, yet powerful tool that seemed to be central to Matsushita's ability to make its centrally driven management processes flexible, sensitive, and responsive to the worldwide opportunities and needs. More important, these three organizational mechanisms are simple enough to be adopted, probably in some modified form, by other companies. They meet the needs of those trying to build an organization process that allows management at the center more influence and control over worldwide operations, without compromising the motivation or operating effectiveness of the national units.

Making Local Management Effective: Lessons from Philips

If Matsushita is the champion of efficient centrally coordinated management, its Netherlands-based competitor, Philips, is the master of building effective national operations worldwide. And as surely as Philips' managers envy their Japanese rival's ability to develop products and strategies in Osaka that appear to be implemented effortlessly around the globe, their counterparts in Matsushita are extremely jealous of Philips' national organizations that are not only sensitive and responsive to their local environments, but are also highly innovative and entrepreneurial.

For example, the company's first color TV set was built and sold not in Europe, where the parent company is located, but in Canada, where the market had closely followed the U.S. lead in introducing color transmission; Philips' first stereo color TV set was developed by the Australian subsidiary; teletext TV sets were created by its British subsidiary; "smart cards" by its French subsidiary; a programmed word processing typewriter by North American Philips—the list of local innovations and entrepreneurial initiatives in the company is endless.

While Matsushita has had no difficulty in establishing effective sales organizations and assembly operations around the world, top management has often been frustrated that its overseas subsidiaries do not exhibit more initiative and entrepreneurial spark. Despite pleas to its overseas management to become more self-sufficient and less dependent on headquarters for direction, the company has found that the decentralization of assets that accompanies its "localization" program has not always triggered the kind of independence and initiative that had been hoped for.

Out of the many factors that drive Philips' international organization, we were able to identify three that not only appear central to the development

and maintenance of its effective local management system, but also may be adaptable to other organizations that are trying to promote national innovativeness and responsiveness within a globally integrated organization:

- Philips' use of a cadre of entrepreneurial expatriates;
- an organization that forces tight functional integration within a subsidiary; and
- a dispersion of responsibilities along with the decentralized assets.

A Cadre of Entrepreneurial Expatriates—Expatriate positions, particularly in the larger subsidiaries, have been very attractive for Philips' managers for several reasons. With only 7% or 8% of its total sales coming from Holland, many different national subsidiaries of the company have contributed much larger shares of total revenues than the parent company. As a result, foreign operations have enjoyed relatively high organizational status compared to most companies of similar size with headquarters in the United States, Japan, or even the larger countries in Europe. Further, because of the importance of its foreign operations, Philips' formal management development system has always required considerable international experience as a prerequisite for top corporate positions. Finally, Eindhoven, the small rural town in which corporate headquarters is located, is far from the sophisticated and cosmopolitan world centers that host many of its foreign subsidiaries. After living in London, New York, Sydney, or Paris, many managers find it hard to return to Eindhoven.

Collectively, all these factors have led to the best and the brightest of Philips' managers spending much of their careers in different national operations. This cadre of entrepreneurial expatriate managers has been an important agent in developing capabilities of local units, yet keeping them linked to the parent company's overall objectives. Further, unlike Matsushita where an expatriate manager typically spends a tour of duty of three to six years in a particular national subsidiary and then returns to the headquarters, expatriate managers in Philips spend a large part of their careers abroad continuously working for two to three years each in a number of different subsidiaries.

This difference in the career systems results in very different attitudes. In Philips, the expatriate managers follow each other into assignments and build close relations among themselves. They tend to identify strongly with the national organization's point of view, and this shared identity makes them part of a distinct subculture within the company. In companies like Matsushita, on the other hand, there is very little interaction among the expatriate managers in the different subsidiaries, and most tend to see themselves as part of the parent company temporarily on assignment in a foreign country.

One result of these differences is that expatriate managers in Matsushita are far more likely to take a custodial approach which resists any local

changes to standard products and policies. In contrast, expatriate managers in Philips, despite being just as socialized into the overall corporate culture of the company, are much more willing to be advocates of local views and to defend against the imposition of inappropriate corporate ideas on national organizations. This willingness to "rock the boat" and openness to experimentation and change is the fuel that ignites local initiative and entrepreneurship.⁹

Further, by creating this kind of environment in the national organization, Philips has had little difficulty in attracting very capable local management. In contrast to the experience in many Japanese companies where local managers have felt excluded from a decision-making process that centers around headquarters management and the local expatriates only, local managers in Philips feel their ideas are listened to and defended in headquarters.¹⁰ This too, creates a supportive environment for local innovation and creativity.

Integration of Technical and Marketing Functions within Each

Subsidiary—Historically, the top management in all Philips' national subsidiaries consisted not of an individual CEO but a committee made up of the heads of the technical, commercial, and finance functions. This system of three-headed management had a long history in Philips, stemming from the functional backgrounds of the founding Philips brothers, one an engineer and the other a salesman. Although this management philosophy has recently been modified to a system which emphasizes individual authority and accountability, the long tradition of shared responsibilities and joint decision making has left a legacy of many different mechanisms for functional integration at multiple levels. These integrative mechanisms within each subsidiary in Philips enhance the efficiency and effectiveness of local decision making and action in the same way that various means of cross-functional integration within Matsushita's corporate headquarters facilitates its central management processes.

In most subsidiaries, integration mechanisms exist at three organizational levels. First, for each product, there is an article team that consists of relatively junior managers belonging to the commercial and technical functions. This team evolves product policies and prepares annual sales plans and budgets. At times, subarticle teams may be formed to supervise day-to-day working and to carry out special projects, such as preparing capital investment plans, should major new investments be felt necessary for effectively manufacturing and marketing a new product.

A second tier of cross-functional coordination takes place at the product group level, through the group management team, which again consists of both technical and commercial representatives. This team meets monthly to review results, suggest corrective actions, and resolve any interfunctional differences. Keeping control and conflict resolution at this low level facilitates sensitive and rapid responses to initiatives and ideas generated at the local level.

The highest level coordination forum within the subsidiary is the senior management committee (SMC) consisting of the top commercial, technical, and financial managers in the subsidiary. Acting essentially as a local board, the SMC provides an overall unity of effort among the different functional groups within the local unit, and assures that the national unit retains primary responsibility for its own strategies and priorities. Again, the effect is to provide local management with a forum in which actions can be decided and issues resolved without escalation for approval or arbitration.

Decentralized Authority and Dispersed Responsibility—While Matsushita's localization program was triggered by political pressures to increase local value added in various host countries, the company had also hoped that the decentralization of assets would help its overseas units achieve a greater measure of local responsiveness, self-sufficiency, and initiative. To management's frustration, such changes were slow in coming.

Philips, on the other hand, had created such national organizations seemingly without effort. The difference lay in the degree to which responsibility and authority were dispersed along with the assets. Expanding internationally in the earliest decades of the century, Philips managers were confronted by transport and communications barriers that forced them to delegate substantial local autonomy to its decentralized operating units. The need for local units to develop a sense of self-sufficiency was reinforced by the protectionist pressures of the 1930s that made cross-shipments of products or components practically impossible. During World War II, even R&D capability was dispersed to prevent it from falling into enemy hands, and the departure of many corporate managers from Holland reduced the parent company's control over its national operations abroad.

In the postwar boom, while corporate managers focused on rebuilding the war-ravaged home operations, managers in foreign units were able to capitalize on their well-developed autonomy. Most applied their local resources and capabilities to build highly successful national businesses, sensitive and responsive to the local needs and opportunities. In doing so, they achieved a degree of local entrepreneurship and self-sufficiency rare among companies of Philips' size and complexity.

Although it would be impossible for another company to replicate the historical events that resulted in this valuable organizational capability, the main characteristics of their development are clear. First, it must be feasible for offshore units to develop local capabilities and initiative, and this requires the decentralization of appropriate managerial and technological resources along with the reconfiguration of physical assets.

While this is necessary, it is not sufficient, however, as Matsushita and many other companies have begun to recognize. Local initiatives and entrepreneurial action must not only be feasible, they must also be desirable for local managers. This requires the legitimate delegation of responsibilities

and authority that not only gives them control over the decentralized resources, but rewards them for using them to develop creative and innovative solutions to their problems.¹¹ Only when the decentralization of assets is accompanied by a dispersion of responsibilities can local management develop into a legitimate corporate contributor rather than simple implementers of central direction.

Building Transnational Capabilities: Lessons from L.M. Ericsson

In multinational corporations, the location of an opportunity (or threat) is often different from where the company's appropriate response resources are situated. This is so because environmental opportunities and threats are footloose, shifting from location to location, while organizational resources, contrary to the assumptions of many economists, are not easily transferable even within the same company. Further, the location of a company's strategic resources—plants and research centers are good examples—is related not only to actual organizational needs and intentions, but also to the idiosyncracies of the firm's administrative history. The result is a situation of environment-resource mismatches: the organization has excessive resources in environments that are relatively noncritical, and very limited or even no resources in critical markets that offer the greatest opportunities and challenges.

Such environment-resource mismatches are pervasive in MNCs. For many historical reasons, Ericsson has significant technological and managerial capabilities in Australia and Italy, even though these markets are relatively unimportant in the global telecommunications business. At the same time, the company has almost no presence in the United States, which not only represents almost 40% of world telecommunications demand but is also the source of much of the new technology. Procter & Gamble is strong in the United States and Europe, but not in Japan where important consumer product innovations have occurred recently and where a major global competitor is emerging. Matsushita has appropriate technological and managerial resources in Japan and the U.S., but not in Europe, a huge market and home of archrival Philips.

Rectifying these imbalances in the configuration of their organization resources is taking these companies a long time and, since the relative importance of different environments will continue to change, the problem will never be fully overcome. The need, therefore, is not simply to make adjustments to the geographic configuration of resources, but also to create organizational systems that allow the spare capacity and slack resources in strong operating units to be redirected to environments in which they are weak.

Simply creating effective central and local management does not solve this mismatch problem, and to succeed in today's demanding international

environment, companies must develop their organizational capabilities beyond the stages described in the first part of this article. The limitation of companies with even the most well-developed local and central capabilities is that the location of resources also tends to determine the locus of control over those resources. Whether organizationally mandated or not, local management develops strong influence on how resources available locally are to be used. Further, organizational commitments are usually hierarchical, with local needs taking precedence over global needs. Consequently, at the core of resolving the problem of environment-resource mismatches is the major organizational challenge of loosening the bonds between ownership and control of resources within the company.

Among the companies we studied, there were several that were in the process of developing such organizational capabilities. They had surpassed the classic capabilities of the *multinational* company that operates as decentralized federation of units able to sense and respond to diverse international needs and opportunities; and they had evolved beyond the abilities of the *global* company with its facility for managing operations on a tightly controlled worldwide basis through its centralized hub structure. They had developed what we termed *transnational* capabilities—the ability to manage across national boundaries, retaining local flexibility while achieving global integration. More than anything else this involved the ability to link local operations to each other and to the center in a flexible way, and in so doing, to leverage those local and central capabilities.

Ericsson, the Swedish telecommunications company, was among those that had become most effective in managing the required linkages and processes, and we were able to identify three organizational characteristics that seemed most helpful in facilitating its developing transnational management capabilities:

- an interdependence of resources and responsibilities among organizational units;
- a set of strong cross-unit integrating devices; and
- a strong corporate identification and a well-developed worldwide management perspective.

Interdependence of Resources and Responsibilities—Perhaps the most important requirement of the transnational organization is a need for the organizational configuration to be based on a principle of reciprocal dependence among units. Such an interdependence of resources and responsibilities breaks down the hierarchy between local and global interests by making the sharing of resources, ideas and opportunities a self-enforcing norm. To illustrate how such a basic characteristic of organizational configuration can influence a company's management of capabilities, let us contrast the way in which ITT, NEC, and Ericsson developed the electronic digital

switch that would be the core product for each company's telecommunications business in the 1980s and beyond.

From its beginnings in 1920 as a Puerto Rican telephone company, ITT built its worldwide operation on an objective described in the 1924 annual report as being "to develop truly national systems operated by the nationals of each company." For half a century ITT's national "systems houses" as they were called within the company, committed themselves to integrating into their local environments and becoming attuned to national interests and market needs. All but the smallest systems houses were established as fully integrated, self-sufficient units with responsibility for developing, manufacturing, marketing, installing, and servicing their own products.

With the emergence of the new digital electronic technology in the 1970s, however, this highly successful strategic posture was threatened by the huge cost of developing a digital switch. Since no single systems house would be able to muster the required technological and financial resources on its own or recoup the investment from its local market, the obvious solution was for ITT to make the System 12 digital switch project a corporate responsibility. However, given their decade of operating independence, the powerful country unit managers were unwilling to yield the task of developing the new switch to the corporate R&D group—and indeed, little expertise had been gathered at the center to undertake such a task.

By exercising their considerable influence, the European systems houses were able to capture the strategic initiative on System 12, but then began disagreeing about who should take what role in this vital project. Many of the large systems houses simply refused to rely on others for the development of critical parts of the system; others rejected standards that did not fit with their view of local needs. As a result, duplication of effort and divergence of specifications began to emerge, and the cost of developing the switch ballooned to over \$1 billion.

The biggest problems appeared when the company decided to enter the battle for a share of the deregulated U.S. market. Asserting its independence, the U.S. business launched a major new R&D effort, despite appeals from the chief technological officer that they risked developing what he skeptically termed "System 13." After further years of effort and additional hundreds of millions of dollars in costs, ITT acknowledged in 1986 it was withdrawing from the U.S. central switching market. The largest and most successful international telecommunications company in the world was blocked from its home country by the inability to transfer and apply its leading edge technology in a timely fashion. It was a failure that eventually led to ITT's sale of its European operations and its gradual withdrawal from direct involvement in telecommunications worldwide.

If effective global innovation was blocked by the extreme independence of the organizational units in ITT, it was impeded in NEC by the strong dependence of national subsidiaries on the parent company. The first person

in NEC to detect the trend toward digital switching was the Japanese manager in charge of the company's small U.S. operation. However, his role was one of selling corporate products and developing a beachhead for the company in the U.S. market. Because of this role, he had a hard time convincing technical managers in Japan of a supposed trend to digitalization that they saw nowhere else in the world.

When the U.S. managers finally were able to elicit sufficient support, the new NEAC 61 digital switch was developed almost entirely by headquarters personnel. Even in deciding which features to design into the new product, the central engineering group tended to discount the requests of the North American sales company and rely on data gathered in their own staff's field trips to U.S. customers. Although the NEAC 61 was regarded as having good hardware, customers felt its software was unadapted to U.S. needs. Sales did not meet expectations.

Both ITT and NEC recognized the limitations of their independent and dependent organizations systems and worked hard to adapt them. But the process of building organizational interdependence is a slow and difficult one that must be constantly monitored and adjusted. In our sample of companies, Ericsson seemed to be the most consistent and experienced practitioner of creating and managing a delicate balance of interunit interdependency. The way in which it did so suggests the value of a constant readjustment of responsibilities and relationships as a way of adapting to changing strategic needs while maintaining a dynamic system of mutual dependence.

Like ITT, Ericsson had built, during the 1920s and 1930s, a substantial worldwide network of operations sensitive and responsive to local national environments; but like NEC, it had a strong home market base and a parent company with technological, manufacturing, and marketing capability to support those companies. Keeping the balance between and among those units has required constant adjustment of organizational responsibilities and relationships.

In the late 1930s, management became concerned that the growing independence of its offshore companies was causing divergence in technology, duplication of effort, and inefficiency in the sourcing patterns. To remedy the problem they pulled sales and distribution control to headquarters and began consolidating responsibilities under product divisions. While worldwide control improved, the divisions eventually began to show signs of isolation and short-term focus. Thus, in the early 1950s the corporate staff functions were given more of a leadership role. It was in this period that the central R&D group developed a crossbar switch that became an industry leader. As the product design and manufacturing technology for this product became well-understood and fully documented, however, Ericsson management was able to respond to the increasing demands of host governments to transfer more manufacturing capacity and technological know-how abroad. Once again, the role of the offshore subsidiaries increased.

This half a century of constant ebb and flow in the roles and responsibilities of various geographic, product, and functional groups allowed Ericsson to build an organization in which all these diverse perspectives were seen as legitimate and the multiple capabilities were kept viable. This multidimensional organization gave the company the ability to quickly sense and respond to the coming of electronic switching in the 1970s. Once it had prevented the emergence of strong dependent or independent relationships, product development efforts and manufacturing responsibilities could be pulled back to Sweden, without great difficulty. Where national capabilities, expertise, or experience could be useful in the corporate effort, the appropriate local personnel were seconded to headquarters. Having established overall strategic and operational control of the digital switching strategy, however, corporate management at Ericsson was then willing to delegate substantial design, development, and manufacturing responsibilities to its international subsidiaries, resulting in a reinforcement of the interdependence of worldwide operations.

Sourcing of products and components from specialized plants have long provided a base of interdependence, but recently that has been extended to product development and marketing. For example, Italy is the company's center for global development of transmission system development, Finland has the leading role for mobile telephones, and Australia develops the company's rural switch. Further, headquarters has given some of these units responsibility for handling certain export markets (e.g., Italy's responsibility for developing markets in Africa). Increasingly, the company is moving even advanced core system software development offshore to subsidiary companies with access to more software engineers than it has in Stockholm.¹²

Dynamic interdependence is the basis of a transnational company—one that can think globally and act locally.

By changing responsibilities, shifting assets, and modifying relationships in response to evolving environmental demands and strategic priorities, Ericsson has maintained a dynamic interdependence among its operating units that has allowed it to develop entrepreneurial and innovative subsidiary companies that work within a corporate framework defined by knowledgeable and creative headquarters product and functional groups. This kind of interdependence is the basis of a transnational company—one that can think globally and act locally.

Interunit Integrating Devices—Although the interdependence of resources and responsibilities provides a structural framework for the extensive use of interunit cooperation, there is a need for effective organizational integrating mechanisms to link operations in a way that taps the full potential of the interdependent configuration.

Compared to some companies in our study where relationships among national companies were competitive and where headquarter-subsidiary interactions were often of an adversarial nature, the organizational climate in Ericsson appeared more cooperative and collaborative. The establishment and maintenance of such attitudes was important since it allowed the company's diverse units to work together in a way that maximized the potential of their interdependent operations. We identified three important pillars to Ericsson's success in interunit integration:

- a clearly defined and tightly controlled set of operating systems;
- a people-linking process employing such devices as temporary assignments and joint teams; and
- interunit decision forums, particularly subsidiary boards, where views could be exchanged and differences resolved.

Ericsson management feels strongly that its most effective integrating device is strong central control over key elements of its strategic operation. Unlike ITT, Ericsson has not had strong or sophisticated administrative systems (it introduced strategic plans only in 1983), but its operating systems have long been structured to provide strong worldwide coordination. Knowing that local modifications would be necessary, the company designed its digital switch as a modular system with very clear specifications. National units could custom-tailor elements of the design to meet local needs without compromising the integrity of the total system design. Similarly, Ericsson's global computer-aided design and manufacturing system allowed the parent company to delegate responsibility for component production and even design without fear of losing the ability to control and coordinate the entire manufacturing system.

Rather than causing a centralization of decision making, management argues that these strong yet flexible operating systems allow them to delegate much more freely, knowing that local decisions will not be inconsistent or detrimental to the overall interests. Rather than managing the decisions centrally, they point out they are managing the parameters of decisions that can be made by local units, thereby retaining the flexibility and entrepreneurship of those units.

But in addition to strong systems, interunit cooperation requires good interpersonal relations, and Ericsson has developed these with a long-standing policy of transferring large numbers of people back and forth between headquarters and subsidiaries. It differs from the more common transfer patterns in both direction and intensity, as a comparison with

NEC's transfer process will demonstrate. Where NEC may transfer a new technology through a few key managers, Ericsson will send a team of 50 or 100 engineers and managers from one unit to another for a year or two; while NEC's flow is primarily from headquarters to subsidiary, Ericsson's is a balanced two-way flow with people coming to the parent not only to learn, but also to bring their expertise; and while NEC's transfers are predominantly Japanese, Ericsson's multidirectional process involves all nationalities.¹³

Australian technicians seconded to Stockholm in the mid-1970s to bring their experience with digital switching into the corporate development effort established enduring relationships that helped in the subsequent joint development of a rural switch in Australia a decade later. Confidences built when a 40-man Italian team spent 18 months in Sweden in the early 1970s to learn about electronic switching, provided the basis for the subsequent decentralization of AXE software development and the delegation of responsibility for developing the corporate transmission systems to the Italian company.

But any organization in which there are shared tasks and joint responsibilities will require additional decision-making and conflict-resolving forums. In Ericsson, often divergent objectives and interests of the parent company and the local subsidiary are exchanged in the national company's board meetings. Unlike many companies whose local boards are pro forma bodies whose activities are designed solely to satisfy national legal requirements, Ericsson uses its local boards as legitimate forums for communicating objectives, resolving differences and making decisions. At least one, and often several senior corporate managers are members of each board, and subsidiary board meetings become an important means for coordinating activities and channelling local ideas and innovations across national lines.

If changes have been slow in coming, it is not for the lack of strategic clarity about the need for change but for want of the organizational ability to implement the desired change.

National Competence, Worldwide Perspective—If there is one clear lesson from ITT's experience, it is that a company cannot manage globally if its managers identify primarily with local parochial interests and objectives. But as NEC has learned, when management has no ability to defend national perspectives and respond to local opportunities, penetration of world markets is equally difficult. One of the important organizational characteristics Ericsson has been able to develop over the years has been

a management attitude that is simultaneously locally sensitive and globally conscious.

At the Stockholm headquarters, managers emphasize the importance of developing strong country operations, not only to capture sales that require responsiveness to national needs, but also to tap into the resources that are available through worldwide operation. Coming from a small home country where it already hires over a third of the graduating electrical and electronics engineers, Ericsson is very conscious of the need to develop skills and capture ideas wherever they operate in the world. But, at the same time, local managers see themselves as part of the worldwide Ericsson group rather than as independent autonomous units. Constant transfers and working on joint teams over the years has helped broaden many managers' perspectives from local to global, but giving local units systemwide mandates for products has confirmed their identity with the company's global operations. It is this ability for headquarters and subsidiary managers to view the issues from each other's perspective that distinguishes the company that can think globally yet act locally.

Conclusion: Organizational Capability is Key

There are few companies that have not recognized the nature of the main strategic tasks facing them in today's complex international business environment. Philips' managers have understood for years that they need to build global scale, rationalize their diverse product lines, and establish a more integrated worldwide strategy. And while their counterparts at Matsushita have recently made localization a company watchword, this is just the culmination of years of effort to build more self-sufficient and responsive national subsidiaries which the company recognizes it will need to remain globally competitive. If changes have been slow in coming to both companies, it is not for the lack of strategic clarity about the need for change but for want of the organizational ability to implement the desired change.

In the course of our study, we found that managers engaged in a great deal of cross-company comparison of organizational capabilities. And the managerial grass inevitably looked greener on the other side of the corporate fence. Philips' managers envied their Japanese competitors' ability to develop global products, manufacture them centrally, and have them launched into markets worldwide on a time cycle that would be virtually impossible in their own organization. On the other hand, as Matsushita's managers face growing pressure from host governments worldwide, and as they feel the vulnerabilities of their central sourcing plants in an era of the strong yen, they view Philips' worldwide network of self-sufficient, well-connected, and innovative national organizations as an asset they would dearly love to have. But the apparently small step from admiration to emulation of another company's strategic capabilities usually turns out to be a long and dangerous voyage.

What we suggest is that managers ignore battle cries calling for "standardization, rationalization, and centralization" or any other such simplistic quick-fix formulas. What is needed is a more gradual approach that, rather than undermining a company's administrative heritage, both protects and builds on it. Having built flexible central and local management capabilities, the next challenge is to link them in an organization that allows the company to do what it must to survive in today's international environment—think globally and act locally. For most worldwide companies it is the development of this transnational organizational capability that is key to long-term success.

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12
WARTON REPROGRAPHICS

Eli Lilly and Company (A): Globalization

In the summer of 1989, Richard D. Wood, chairman and chief executive officer of Eli Lilly and Company, looked back over his company's 1988 performance. It had been a very good year. The company had achieved excellent financial results, with sales increasing 12% to \$4.1 billion and net income increasing 18% to \$761 million, extending its record to 28 consecutive years of increased net income. Two major new products, the antidepressant Prozac and the antiulcer agent Axid, were about to be introduced around the world. Along with other exciting new products under development, they provided substantial growth opportunity. Prozac alone achieved sales of more than \$100 million in its first year, the highest ever for any Eli Lilly product in its initial year.

At the same time, the company continued to implement programs for its future, many of which focused on improving its position outside the United States. Although Eli Lilly was the second largest pharmaceuticals supplier in the United States, the largest market in the world, it ranked eleventh worldwide. In the important European market, it ranked as the twenty-fifth largest supplier, putting it in the second- or third-tier in that region. Several of the company's leading competitors were significantly ahead in their overseas business activity.

In the last few years, the company had been making substantial investments to strengthen its position in key markets outside the United States. These investments were part of the company's long term strategy to seek global leadership in anticipation of the changes taking place in the industry. Confident of Lilly's ability to maintain its leadership position in the United States, Wood was considering what further steps, if any, were necessary to expand it on a global basis.

Company History

Eli Lilly traces its origins to 1876, when Colonel Eli Lilly founded a new business with four employees, including his 14 year-old son, Josiah, and a total capital of \$1,400. Although it was the heyday of patent remedies, Colonel Lilly chose to make medicine according to recognized scientific criteria of the day: precise formulation, accurate compounding, standardization by assay, full disclosure of ingredients on the label, and honest claims.

Thomas W. Malnight prepared this case under the supervision of Professor Michael Y. Yoshino as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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The Lilly family members were entrepreneurs who risked their own money in developing the business. Their early philosophy was summed up in a 1908 statement by President Josiah Lilly:

To those who come after us, we can only say: keep up an organization of able, well-paid associates; avoid tyranny but keep control; keep steady and consistently to an honorable and correct policy; be conservatively progressive and keep away from outside business ventures. There is sufficient field in this business for all the thought and effort one should care to devote to business matters.

May the red Lilly trademark which has become so prominently identified with pharmaceuticals remain the symbol of all that is upright and creditable and be passed on to successive generations unsullied. A weak generation could wreck this truly splendid business.

Through the years, the company was a leader in the pharmaceuticals industry, as well as in management practices in general. It created a scientific division in 1886, a separate research building in 1911, and a department of experimental medicine in 1912. Various generations of the Lilly family led developments in improving "systematic" (as opposed to scientific) management, assigning to management the responsibility of maintaining operations with sound planning and equitable standards of performance. These efforts resulted in substantial improvement in productivity and reduction in employee turnover. The company was a leader in setting standards and practices in hiring, training, job classification, compensation, and benefits, the combination of which led to its becoming the largest pharmaceuticals firm in the United States during the early 1940s, a position it maintained until 1985. This achievement was especially noteworthy because all of the early growth resulted from internal improvements and expansion – not diversification – and was financed solely within the organization itself.

The company continued to maintain and practice the same high standards. According to Wood, only the second nonfamily member to be chairman, "The Lilly family and its traditions and values guide our operations to this day. These principles have been the cornerstone of 11 decades of success, and they seem as relevant today as they were in 1876."

According to Steve Stittle, vice president of Human Resources, the corporate culture consisted of "expressions of basic human decency, respect for the individual, and the attainment of excellence." The culture was integrated into daily management practice through a system of collective responsibility, including consensus management, committee processes, goal orientation, and high performance standards. The company's objectives are summarized in its corporate mission statement, shown in **Exhibit 1**.

Eli Lilly Businesses

Eli Lilly was engaged in the discovery, development, manufacture, and sale of a broad line of human health and agricultural products. The company manufactured and distributed through facilities in the United States and 25 other countries. Its products were sold in more than 130 countries. **Exhibits 2 and 3** outline recent financial results.

Human Health Care Products

Human health care products, including pharmaceuticals, medical instruments, and diagnostic products, accounted for 1988 sales of \$3,272 million, or 80.4% of total sales. The

largest segment was pharmaceuticals, which accounted for \$2,680 million, or 65.8% of total sales. Traditional pharmaceutical product lines emphasized antibiotics and diabetic care products. Exhibit 4 outlines Lilly's major pharmaceutical products -- along with their therapeutic category, therapeutic indications, and estimated sales -- and new products under development.

A leader in oral and injectable antibiotics, the company marketed one of the broadest lines of cephalosporins in the industry. Antibiotics sales in 1988 were \$1,351 million, or 33.2% of total sales. Competition in antibiotics sales was very intense due to increased availability of effective products, government-mandated cost-containment measures, and competition from generic drugs as patents expired.

Sales of diabetic care products were \$446.0 million in 1988, or 11.0% of total sales. Although its patent for insulin had long expired, Lilly, due to its expertise in the manufacturing process and patient sensitivity to even slight variations in product quality, remained the world leader in the supply of insulin.

The company expanded its pharmaceutical product line into chronic-care and retail segment products, with success in the antidepressant Prozac, the antiulcer agent Axid, and several other promising products. They not only offered high growth potential, but were in accord with Lilly's changing strategic focus. Regarding chronic-care products, once a medication had been prescribed, use continued for an extended period. Retail products were less sensitive to large-scale buyers and increasing price competition than hospital products.

In its pharmaceuticals business, Lilly enjoyed a high operating margin due to effective management of operating expenses, low manufacturing costs, resulting from expertise in the fermentation process, and a high value-added product line.

Sales of medical instruments were \$592 million in 1988, or 14.5% of total sales. The medical instruments business was conducted through five subsidiaries, most of which had been acquired in an effort to expand business in this field. Specific products included patient-vital-sign measurement and monitoring systems, intravenous fluid-delivery and control systems, catheters for coronary balloon angioplasty, cardiac pacemakers, implantable defibrillators, and peripheral and coronary atherectomy catheter systems.

In 1986, through the acquisition of Hybritech, Lilly expanded into diagnostic products. By this move, the company positioned itself to be one of few suppliers involved in pharmaceuticals, medical instruments, and diagnostics.

Agricultural Products

Agricultural product sales in 1988 were \$798 million, or 19.6% of total sales. They included plant science and animal health products, which accounted for sales of \$462 million and \$336 million respectively. The company, which conducted this business through the Elanco Products Company, was in the advanced stages of forming a joint venture with Dow Chemical which would assume all the company's agricultural chemical business. Management believed that the joint venture would be a world leader in the agricultural chemical field by combining the strengths and resources of both companies. It would also allow Lilly to focus its management attention on its core human health care business.

Pharmaceutical Industry

In 1988, the world market for pharmaceuticals totaled \$154.2 billion, a 15.6% increase from 1987 and representing a compound annual growth rate of 14.3% over the prior five-year period. Exhibit 5 provides a breakdown of the market by region and country. The top eight markets accounted for 77% of the total world market.

The pharmaceuticals market could be divided into two segments: retail and hospital. On an aggregate basis in the top eleven markets in the world, the retail market accounted for 73%, and the hospital segment accounted for 27%. In all of the top eleven markets, except Japan, the retail percentage was more than 80%, whereas in Japan, this share was 52%. Due to concentrated buying decisions and more government regulation, competition in the hospital segment was more severe than in the retail sector.

Environment

The market for human health care products continued to show excellent opportunities for growth. Due to medical advancements, people throughout the world were living longer. In the United States in 1950, 8% of the population was 65 or older, but by 1990, the portion was expected to reach 13%. The same trend was found in other major developed markets. Typically, people over 65 required three to four times the medical support than did younger people. In addition, developments in modern health care technologies, including recombinant DNA and monoclonal antibodies, created entirely new approaches to diagnosis and treatment and were expected to produce a steady flow of major advances in medical technology. In total, the worldwide market for pharmaceutical products was expected to grow to \$185 billion by 1993 in 1988 constant dollars, representing a real compound annual growth rate of 7.9%.

Exhibit 6 outlines the development process for a standard pharmaceutical drug product. Despite the large growth potential of this industry, there were new obstacles facing pharmaceuticals suppliers. The cost and time associated with developing, obtaining regulatory approval of, and introducing new products had grown substantially. Standard estimates of development costs of a new drug were \$125 million (see Exhibit 7 for a breakdown of this total cost). However, an industry group estimate based on a statistical survey of major pharmaceuticals companies increased this figure to \$200 million for every new drug launched. The development and approval period increased to 10 to 12 years from the initial discovery of a compound. The lengthening development time was an important challenge given the limited patent life for each product. A patent application was typically filed 1-2 years before IND submission, and restricted competition for 17 years after the patent was ultimately issued. (This led firms to attempt to lengthen the application review period, thus also lengthening the total period a compound was protected.) Finally, there was substantial risk associated with the entire R&D process. According to industry data, only one out of every 5,000 to 10,000 compounds discovered developed into a marketable product. In addition, only one out of four products launched provided a return sufficient to cover its initial investment.

In addition, there were growing challenges even after a product was introduced. Because of spiraling health costs, there was in all major markets an increasing emphasis on cost containment, including price controls, restrictive reimbursement schemes, managed health care programs, greater governmental involvement in medical and pharmaceutical reimbursement,

especially for the elderly, poor, and uninsured. These measures reduced the flexibility of the pharmaceuticals suppliers in pricing decisions.

Another significant aspect of the changing market environment for pharmaceuticals was the growing competition from generic drugs once a patent expired. Prior to 1984 a generic drug manufacturer could file an abbreviated New Drug Application (ANDA). In most cases the FDA's approval of ANDA's was much faster than the approval of an originator firm's New Drug Application (NDA). In 1984 Congress passed the Drug Price Competition and Patent Restoration Act. This legislation enhanced the ability of generic manufacturers to gain approval of generic ANDA's -- to the point that generic manufacturer's products were available almost literally on the day after a patent expired. In exchange for this, innovator firms were granted patent term restoration for up to five years. The amount of restoration that is granted was a function of the estimated amount of regulatory delay in approving a new drug. It was not unusual for sales of a drug to drop as a result of generic-drug competition by 35% to 50% in the first year and continue to decline thereafter.

Overall, these trends forced pharmaceuticals suppliers to manage carefully the complex process of drug development, introduction, and marketing to maximize profitability.

Therapeutic Categories

Exhibit 8 shows a breakdown of the worldwide pharmaceuticals market by major therapeutic classes, including the share of total demand for each category by major geographical area. The markets for pharmaceutical products traditionally varied from country to country, reflecting differences in philosophies of medical practice, approaches to testing of health care products, and government programs for financing medical costs. Demonstrating such differences is **Exhibit 9's** breakdown of the market by therapeutic category for some of the larger markets.

Differences in health care markets were slowly but steadily diminishing. Although some medical conditions affected people in only a few parts of the world, the most serious problems were common in every major country. Traditionally, health officials took vastly different approaches to evaluating the safety and effectiveness of medical products, reflecting the preferences of local medical scientists and professionals. However, there came a trend for authorities throughout the world to communicate and develop regulatory standards. One example was the European Economic Community's development of a multistate application procedure, which was expected to simplify the registration and approval processes in member nations.

Competitors

Exhibit 10 provides a breakdown of the ranking of leading pharmaceuticals suppliers around the world and by major region. Lilly's position in each market varied substantially. Globally, it ranked eleventh (eighth, if sales to Japan through local representatives were included). Lilly ranked second in the United States, but did not rank in the top 10 in any other individual market. In each major market, there were great differences in market share based on the supplier's nationality, as outlined in **Exhibit 11**.

There were large differences among competitors in annual growth rates, pharmaceuticals sales as a percentage of total sales, percentage of sales in its home country, and R&D expenditures. **Exhibit 12** shows data on the major suppliers in each of these areas.

International Business

Lilly had a long history of OUS (a Lilly term for outside the United States) business, beginning with its first shipment of pharmaceutical products to London in 1884. In 1909, it began exporting capsules to Japan and in 1918 stationed its first sales representative outside the United States, in Shanghai.

A first important phase in the systematic expansion of OUS operations began in the late 1950s with the establishment of "bricks and mortar" presence in key markets and hiring of "nationals" to perform required functions. In the 1970s, OUS efforts followed the expansion of Lilly's antibiotic product development, and the resulting organization and distribution channels were geared toward marketing the developing hospital-oriented antibiotic products. During both of these periods, OUS business was tightly managed from the Indianapolis headquarters (referred to in the company as "Indy").

A next important phase in the development of OUS business occurred when Dr. Mel Perelman served as president of the International Division, from 1977 to 1986. When Perelman took over his position, he started to expand OUS business substantially by encouraging overseas staff to think more aggressively and to "ask Indy more often, and once in a while they may even say yes." From 1976 to 1980, OUS sales grew from less than \$500 million to \$900 million. Perelman attributed much of this growth to an "expansionist attitude and loosened reins."

The role of the affiliates was to sell products developed by the research department, and it was assumed that all products were marketable on a worldwide basis. If Indy decided to market a new product, all OUS affiliates had to promote the product, unless they had compelling reasons not to. This export focus was the primary driver behind the expansion.

To support OUS activity, the company expanded its international marketing division staff at Indy. Before 1979, it had about 10 staff members, who acted mainly as advisors conducting some limited market research activity. After 1979, it assumed greater responsibilities by adding international product managers to coordinate with the domestic product managers. The group also developed sales training programs for overseas employees and standardized market survey procedures to be used in new product introductions.

During the 1970s and early 1980s, two important environmental changes affected OUS business: escalating medical costs and resulting rigorous, government-instituted price controls to contain them. In addition to these changes, the U.S. dollar began rising, damaging the profitability of OUS business. Overall, the early 1980s was a difficult period for Lilly's OUS business and resulted in a contraction of OUS activity, particularly in some of the smaller or hyperinflation markets.

Moves Toward Globalization

In the 1980s, a series of developments took place within Lilly as it expanded its resources and scope of activity around the world. As described by Gene Step, president of the Pharmaceuticals Division, these changes were part of the long term evolution of the industry.

When looking back over the years, we've had ongoing discussions about how we should be organized -- by product line or geographically. Strong cases could be made

both ways. In the past, the way we sold our products in the U.S. and OUS markets were different, including different launch schedules and prices. This made a compelling argument for being organized geographically. However, gradually over the years, the similarities became larger than the differences. We could also look at the evolution of the pharmaceuticals business and see fewer, bigger players in an increasingly competitive environment. These developments made us reconsider how to organize our business. In the 1970s, we began to move toward worldwide management by adopting a worldwide planning system for the pharmaceuticals division. However, we still maintained a geographic structure for implementation. During the 1980s, the evolution of the industry continued and we made further changes by realigning our structure in line with the requirements of the industry.

According to a senior executive when recalling this period, "In 1985, a wave of new products for the future became clear. Richard Wood saw this wave coming and took steps to strengthen OUS operations to develop worldwide potential for products in the pipeline." To prepare for the new products, several changes were made in the mid-1980s.

First, Wood separated the Elanco operations from the International Division, making Elanco a worldwide business unit. In 1986, he made another move putting the International Division under Gene Step, president of the Pharmaceuticals Division. This change created a pharmaceuticals business unit responsible for worldwide marketing activities of all pharmaceutical products. Under Step, one executive was responsible for U.S. marketing and another for OUS marketing. The purpose of these reorganizations was to orient each major business lines to opportunities and markets throughout the world. **Exhibit 13** describes the organizational structure of the company after these moves.

Within the International Division, the reorganization caused concern that under a global structure, busy headquarters staff would not have the time, inclination, or experience to pay attention to markets in which Lilly had a small market position. Many of these markets had particular idiosyncrasies, and often the total market size was smaller than even one region of the U.S. market, where the company was well established. Business, social, political, and economic factors to which domestic management was accustomed, including pricing freedom and a well-known market reputation and position, were lacking in several markets for which it would now be responsible.

In addition to the reorganizations, changes were made in the leadership of OUS operations, with the appointment in January 1987 of Sidney Taurel as president of the International Division, replacing Mel Perelman, who became executive vice president of the company, as well as president of Lilly Research Laboratories (LRL). Taurel, a 1971 Columbia MBA, was the first international staff member to run OUS operations. Before assuming this position, Taurel had been executive vice president of International, stationed in the United Kingdom. While in this position, he had strengthened coordination within Europe, including initiating planning meetings for European country managers, medical directors, and marketing staff. These meetings were later expanded to include affiliates from throughout the world. Because of his experience, Taurel became recognized by top management as an expert in international business, and his selection indicated his expected role in leading an aggressive expansion of OUS activity.

Overseas Sales Organization

As part of its goal to increase OUS sales, Lilly expanded its presence in strategic markets. One area was the European market, where the company established an objective to be ranked in the top 20 by 1990 and in the top 10 within the 1990s. The company felt this rapid growth was achievable based upon the new products being introduced during this period.

In the United Kingdom, a second sales organization was established, doubling the sales force to 140. In France, the retail sales force was increased from one organization of 106 to two of 120 each. In Italy, the existing sales organization was increased from 120 to 160, and a second sales force of 70 was added. In West Germany, the sales force was increased by 30.

In Japan, Lilly products already held a significant market position, with one of its drugs, Ceclor, the largest single product. However, all sales to Japan were made through local Japanese companies, which handled the entire registration and marketing process. The arrangement severely limited the company's direct access to the market. In addition, Lilly's major local partner was itself a producer of pharmaceutical products, and there were increasingly areas of product overlap and resulting conflict of interest. For these reasons, as well as the sheer size of the market, management decided in the early 1980s to establish an independent organization to handle registration and sales of future products. From 1985 to 1989, an organization of 325 (including 200 sales staff) was put in place. Although the organization was large enough to handle products that would be emerging over the next five years, in the long run, to be a major supplier to Japan, Lilly would need a sales organization of 500 to 600. Given the length of time needed to develop such an organization, when to expand further was a subject of management consideration in 1989.

With the company heavily investing in Japan and major expansions happening in other markets, management was concerned about a deterioration in profitability of OUS operations. This situation was compounded by the differences in margins and regulatory approval periods which would affect the return on Lilly's investments. In general, pharmaceuticals price levels in the United States were above those available in most of Europe, while U.S. regulatory approval times tended to be longer. For new products, Lilly tried to secure comparable prices at the time of introduction of the product.

Business Planning System

In addition to changes in the organization and leadership, there were changes in corporatewide systems which affected OUS operations. One was in the strategic and financial planning process, run by Jim Cornelius, chief financial officer. Originally, the company had a strong, centralized approach to the long-range planning process, with strong financial emphasis. For example, when Cornelius first ran the planning process upon his appointment as corporate treasurer in 1982, the plans were shared exclusively with the Executive Committee of the Board of Directors. According to Cornelius, "I immediately saw the need to move strategic and financial planning beyond this group of top executives and involve other managers in the process, both to seek their expertise and to use the planning process as a communication device within the company." Cornelius subsequently oversaw substantial changes in this system. A strategic planning committee with a broader corporate representation and more issues-oriented agenda was formed and met frequently throughout the year.

Eli Lilly International prepared its own business plan, which was merged with the plans of other operations in the final stages of the corporate planning system in October of each year. The international business planning cycle began every January, when all the regional vice presidents met at Indy to discuss in detail the status of new and developing products and to prepare assumptions for use as the basis of subsequent plans. From OUS operations, Sidney Taurel and three regional vice presidents attended this meeting. The planning assumptions were then sent to the general manager and medical directors of each affiliate, and in early February, a worldwide planning meeting, called the Medical Marketing Meeting, was held.

Following this meeting, each overseas affiliate prepared a three-year plan to submit in mid-April for review by the regional vice presidents in May and a total OUS review by the end of June. The plans were then consolidated with the U.S. plans and reviewed during planning meetings at Indy in July. Taurel personally reviewed in detail the plans for each of the major markets and presented the OUS plan. From these plans, budgets based on initial-year projections, which were submitted to the Board for approval along with the budgets of other operations, were established.

According to Taurel,

This planning process has helped force each unit to work together and served to provide discipline to each affiliate. However, involving the affiliates earlier in the process, when there is a high degree of uncertainty as to final product decisions, has led to disappointments when product assumptions change. This has required introducing greater flexibility to the affiliate planning and resource allocation processes.

According to one regional vice president,

We spend a lot of time on the planning process. In total, I spend about 11 weeks each year either putting together or reviewing plans. Although this is a lot of time, there is no good alternative. Given the industry we're in and the diversity of our operations, this planning process is crucial for both control and communication.

One change resulting from the new planning process was that when critical go/no-go product decisions were made, total worldwide potential was considered. In the past, such decisions had been made based on only the U.S. market.

International Personnel Policies

Dick Wood commented on the importance of management development.

Constantly we have to work at developing our staff around the world, trying to find the right mix of staff and capabilities. I firmly believe that our value system is our single most important competitive edge and I am committed to spread it to all our operations. The most effective way we've found to do this is through interaction among our staff from different operations and backgrounds, especially when this interaction takes place at Indy where the total benefits of the culture are apparent. We have developed a number of programs to encourage these interactions. For example, we have very active formal management development programs for our managers at different levels from all over the world. I am also encouraged to see various functional groups now meeting regularly on a worldwide basis.

Before the late 1970s, Lilly had assigned Americans to key OUS positions as part of their career development. The result was often that people with little international training or expertise were put in charge of expanding business. In 1979, the company had at least one nonlocal executive in every affiliate. In 1989, except for staff at the European regional headquarters, there were only a few Americans in European operations.

An important step in developing OUS human resources came about through several programs to hire, train, and develop foreign nationals. From the 1960s, Lilly had hired foreign graduates of U.S. MBA programs. In the early years, these new hires were assigned directly to their home countries. Later, many of them were initially brought to Indy for two years before being reassigned to their home countries, where they would eventually become top management.

The programs were significantly expanded in 1986, with hiring at major U.S. and European business schools. New employees hired in Europe were typically assigned to their home country operations. In 1988 alone, a total of 26 European MBAs were hired, 14 directly in Europe and 12 in the United States.

In the 1950s, Lilly began summer internship programs in the United States; a similar program began in Europe from 1988. A total of 24 interns were hired in 1988, 9 in the United States and 15 in Europe.

The company also increased training programs for OUS staff. The first new one was the International Sales Management Development program, for which each affiliate submitted a list of candidates who typically had two to four years of experience. Those selected were sent to the United States for two to three years, with an individually developed assignment. A typical assignment could include one year in marketing or market planning and one year in the field as a sales supervisor. The program's intention was to use the company's best resources, its U.S. marketing systems, to train OUS staff. It was later expanded, with affiliates establishing their own national sales management development programs for sales supervisors.

The company extended this system to more senior levels by establishing rotation or transfer programs for staff members with 8 to 10 years of Lilly experience. These employees would take regular jobs at Indy at an associate, manager, or even director level.

Lilly also conducted a variety of internal management development seminars, held at various levels of the organization and involving participants from throughout the world. The results of all these programs were impressive; several major overseas affiliates were headed by executives who had participated in them.

Personnel programs to develop OUS human resources became firmly installed in the overall corporate planning process, involving formal reviews twice a year during the corporate planning week. At the meetings, each international vice president was requested to describe personnel changes since the last meeting and identify prospective talent and expected job openings during the coming 6 months, 6 to 18 months, and beyond 18-month periods. The information was then coordinated at a corporate level to maximize worldwide human resource expertise where needed. To support this process, it was necessary to establish a unified system of job evaluation and ranking so that all positions could be classified under the same system. The consolidation increased the company's ability to establish one worldwide personnel organization.

With the expansion of OUS operations, one area of concern to the International Personnel Department was reviewing and improving all communications programs to ensure that employees, wherever located, understood and maintained Lilly's culture and values. Included was knowing how it did business and how it treated people both inside and outside of the company. Lilly believed that shared values were an important element of its corporate strategy, supporting its reputation in medical communities around the world. According to Taurel,

Shared values enable men and women from many countries to work together effectively. Indeed, the clinical testing, registration, marketing, and sales of pharmaceutical products require superior teamwork. The Lilly corporate culture helps us communicate priorities, make decisions, and implement plans. In our global business, this spirit represents a distinctive competitive advantage.

Lilly Research Laboratories

R&D activity was key to the long-term success of Eli Lilly. According to Mel Perelman, president of LRL,

We spend over \$500 million on R&D activity, and there is an increasing need to ensure that we have gathered the best management and technology, as well as that we are betting on the right areas from both a science and market perspective. This requires a global approach in identifying and selecting the best prospects for major breakthroughs. Today, R&D activity, especially in the latter phases of clinical activity, is carried out on a global basis. Lilly used to conduct phases one and two only in the United States so that the results could be directly observed. We now use the world for clinical testing even before we know if a discovery will lead to a new product or not. This is necessary to move faster and use medical opinion leaders around the world; it subsequently helps in the marketing stage.

There were changes in LRL's organization and R&D activity essential to the effort to expand OUS business due to the complicated product development process.

Research Activity

According to Dr. Leigh Thompson, group vice president at LRL,

Discovery research is changing. In the past, major breakthroughs could be made by a single individual. Now the level of technology we are dealing with requires so much breadth of knowledge that it takes a team approach using experts from various scientific fields. It also involves better information management. There is so much science going on throughout the world that future breakthroughs will likely result from a synthesis of all this information. We still need 'great' individuals. In fact, we need more and better scientists all the time. But 'great' individuals in the future will be the ones who can put all the information together and come up with the innovative ideas.

Traditionally, Lilly researchers were granted extensive freedom in selecting topics for research. However, because of escalating R&D expenses, changing market conditions, and a new research strategy, inclusion of the committee structure to direct the research process became part of the function, as outlined in Exhibit 14.

According to Thompson, one of the reasons for the new structure was to put more responsibility on the researchers' shoulders.

A major challenge is to increase the involvement of our scientists by making them responsible for product strategic planning and execution. Marketing managers are not close enough to the actual science involved to do this task. Our action groups should push plans up to the strategy groups, based on their detailed expertise. The strategy groups should be a filter to select from among the best of these plans. The higher committees will then put them all together from the viewpoint of our total corporate strategy. This filtering process is critical because one of the toughest jobs at LRL is to decide when to stop a research project that does not have a good chance of success. We should be able to substantially increase the productivity of our discovery research activity if we can make all this work.

LRL faced another serious challenge for its future. In 1989, 90% of all discovery research activity occurred in the United States, with the remaining 10% at Lilly's Erl Wood facility in the United Kingdom. Not only did this incongruity challenge the company in trying to keep up with and lead developments around the world, but it also limited its ability to meet future staff requirements. Since 1928, LRL requirements for scientists increased at a 6% compound annual rate. Even if only a 3% annual compound rate of increase were to continue over the next 40 years, LRL would need 24,000 scientists. According to Thompson,

A big challenge for us is where we will be able to find all these scientists, certainly not from the United States alone. We'll also have to go beyond Europe, to Asia. In the future we will need to hire the brightest minds anywhere we can find them, and we need to prepare for this now. It takes a long time to build up a basic research laboratory overseas, so if the company wants to do so, we should start planning for it now.

Clinical Activity

Before the 1980s, most Lilly clinical research and testing of chemicals had occurred in the United States, a pattern supported by the leading position held by the U.S. Food and Drug Administration (FDA). Regulatory authorities around the world had accepted FDA data in local applications. However, as a result of Lilly concentrating these activities in the United States, key research physicians in other major markets, including Europe and Japan, did not recognize the company as a significant supplier. It had never approached these physicians with new drugs during the initial research and testing phase, and because they were excluded in the initial stages, they did not have much interest in studying the products when such studies were necessary for obtaining local approvals. In addition to affecting local regulatory approvals, this situation had a direct impact on subsequent marketing activities. Local investigators were typically important opinion leaders, who could impact subsequent demand for a product.

Another factor affecting the clinical trial process was the expanding number of patients required for regulatory approvals. As an example, for one product introduced in the early 1980s, 1,500 patients were involved in the clinical trial process. For a similar product which was in the process of being introduced at the end of the decade, the number of patients required was about 10,000. Given the increasing number of patients required, it became necessary to expand the "pool" of potential patients for these trials to include those outside the United States. As a result of all these trends, worldwide clinical activities became of primary importance to management, and strengthening the clinical organization was given high priority.

To lead an expansion of OUS clinical activity, the company hired Dr. Alan Weinstein, a well-known academic researcher, as vice president of LRL in 1983. Although reporting to LRL, he was given the responsibility for making clinical activities a part of OUS business.

According to Weinstein, "Getting key research physicians in all major markets involved at an early stage in the research and testing process is essential to our business to allow the simultaneous introduction of new products in each market." To accomplish this task, there was a substantial expansion of OUS clinical staff to a level in 1989 two and a half times the level in 1983. Particularly significant increases were undertaken in the major European and Japanese markets.

One particular problem faced was the difference in time orientation between the affiliates and the research staff. Traditionally, management at the affiliates had been measured against short-term profitability, whereas the clinical staff was always considering several years. Expansion of clinical operations was charged against the budget of each affiliate, thus adversely affecting their short-term results. Despite these challenges, the affiliates recognized the need for the expansion of the clinical operations to support their long-term growth.

OUS clinical staff operated under an informal matrix structure. Organizationally, they reported to the management of their affiliate; however, functionally they reported to Weinstein. Based on Lilly's culture, this matrix structure worked well from both affiliate and clinical perspectives.

According to Weinstein,

The differences in product requirements between the United States and Europe are rapidly diminishing since the problems being faced and approaches taken are nearly the same, and we are now taking advantage of this development. By using a global approach, we can not only expedite the actual clinical testing activity and regulatory approval process but also assist in the final marketing of the products.

As an example of the progress made in clinical activities for three major new clinical testing programs then under way, 50% of the test data were generated in the United States and 50% in other markets. The data was generated using the same research protocol, and the applications for regulatory approval for these products throughout the world would incorporate this globally generated data.

Manufacturing

Pharmaceutical manufacturing activities were broken down into three stages: development, bulk manufacturing, and formulation fill and finish operations. Development represented the linkage between R&D and manufacturing and involved process development, as well as the production of small quantities of products for use during clinical trials. Bulk manufacturing was the large scale production of the pharmaceutical products, an activity tightly regulated by government authorities. According to industry sources, bulk manufacturing location decisions were traditionally driven by tax considerations, where makers located the plants in "tax havens" and reduced tax liabilities through transfer pricing mechanisms. Fill and finish facilities were smaller scale operations which took materials from the bulk plants and supplied the final products.

Traditionally, Lilly development and bulk manufacturing activities reported directly to Indy, whereas many fill and finish operations reported through local affiliates. In late 1987, the company began to reconsider this approach. Joe Cook, vice president, Production Operations and Engineering, described how this process began.

When I first took over my current responsibilities, we presented our capital budget for the year carefully describing how much we proposed to spend and how the funds would be used. During the meeting, the chairman asked a different question. Rather than asking how much we wanted to spend that year, he asked how much should we spend. This began a discussion about what would be the role for the manufacturing function in the future.

Following up on this meeting, Lilly began an intensive study of where capital investments had been made in the past. The study found that decisions had typically been reactive, responding to immediate requirements with little overall coordinated planning. According to one executive, "The primary consideration had always been to keep cranking out the products. Manufacturing was never considered a high priority function."

As a result of the study, in 1988 Lilly formed a new committee, the Manufacturing Strategy Committee, composed top executives from manufacturing, engineering, development, marketing, finance, personnel, and international. The committee was formed to develop the cross-functional support necessary to consider the full implications of manufacturing activities, and it was expected to take a leadership role in establishing global manufacturing policies. These policies were expected to consider issues related to human resource planning, technology deployment, sourcing decisions, capital investment programs, and vertical integration.

Although still in the early stages, the committee had begun to consider a new vision for manufacturing activities. One example was the recognition that the company would not be able to afford to spread its critical technologies across multiple smaller scale plants. Rather, it would be increasingly necessary to strategically concentrate specific technologies at key, world-scale facilities around the world.

Cross-Functional Linkages

With the changing business environment, it had become increasingly necessary to involve non-scientific functional areas, including marketing, early in the drug development process. Within Lilly, one of the areas responsible for this important linking function was the Pharmaceutical Product Management (PPM) group, a corporate staff operation headed by Dave Thompson. Thompson described his activities as follows,

Many of the products we are now developing will not be launched until the late 1990s. We know the environment will continue to get tougher, and we'll have to emphasize innovation, shorten our product development cycle, and be globally ready to maximize our new product introductions. We can't do this if we take a functional approach; rather, we need to involve all functional areas in the development programs - taking a process approach. Our group is responsible for managing the business side of all compounds under development on a worldwide basis up to the actual product launch. Then we pass this responsibility on to the line units.

Several changes had been made in order to provide these linkages. Thompson, representing the marketing function, sat on several key committees responsible for the

management of the research development process, including a group of 12 senior executives given a corporate charter to direct discovery research. Thompson, along with other senior research and clinical executives, also sat on the critical Project Team Approval Committee (PTAC) which voted on the project teams candidates to be approved.

There were also important changes in the make-up of the project teams themselves. Before the early 1980s, project teams were managed by scientists. However, a new group of managers to head up the project teams was installed in LRL. Their job was to manage the project teams, including working with the PPM group and all major functional areas within the company. Each manager had total responsibility for the compound during the development process.

Before a new project was proposed to the PTAC, PPM was charged with providing business input incorporating U.S. and OUS market research data. For therapeutic areas that were familiar to Lilly, the initial worldwide business data would primarily be drawn from industry statistical sources and Lilly's experience. For new product areas, PPM conducted field market research, which tended to be undertaken in the United States. According to Thompson,

We do most of the preliminary field research in the United States. If the market here supports a go decision, it usually will support a go decision for OUS markets. If the market in the United States does not support such a decision, it is unlikely that the OUS markets alone can support the development cost on their own. Therefore, on the clear decision areas, we rely on U.S. research. If a decision is in a grey area, then we will expand our preliminary field research to OUS markets.

The management process for new compounds originated from this central group at Indy. As a compound progressed through the stages of development, a similar group at the European headquarters, would get involved. After a compound received a favorable product decision, a rigorous process began to develop worldwide marketing plans, which began with a Kickoff Meeting attended by all major affiliates. At this meeting, discussions centered on the disease, the product, the markets, and issues that required further study. Subsequent meetings, including profile, concept, and message-testing meetings, were held to consolidate the worldwide findings and prepare a marketing plan. In 1989, there were about 50 compounds under development in the system.

1989 Status

Considerable progress was made in expanding business operations globally. In many OUS markets, Lilly was one of the fastest growing companies and was rapidly improving its market position. However, at various operating levels there were issues perplexing management, such as the following:

A European executive commented on the status of the globalization effort.

We've now arrived at the point where we've increased our awareness of our international operations, both at Indy and overseas offices. The challenge now is to be competitive with the home-based competition in each of the key markets. We're still the new kid on the block, and we're not yet fully competitive in our product line. We still have to find the way to take advantage of all the resources we've now put in place for our long term objectives, without sacrificing our short-term performance.

Another European executive described an issue related to insulin as a example of the effort that Lilly still had to undertake. A European competitor had introduced a delivery pen simplifying the injection of insulin, a device widely used throughout Europe.

We repeatedly asked Indy to develop and supply this pen. But its development group asked the U.S. marketing group how important the request was, and since the pen wasn't used in the United States, they of course felt it was not important. It took two years for Indy to finally agree to develop it. We still haven't introduced it yet, but it's at least under development. Unfortunately, we have lost some important time and opportunity because of this delay. Trying to replace local suppliers after they have established their position is more difficult than if we could have competed equally from the start.

Another example of delays in responding to daily requests took place regarding supplying small laboratory samples to a local investigator. According to an executive involved with the request,

We received a proposal from an investigator related to his interest in studying one particular aspect of one of our drugs. From time to time we receive such requests, which are not directly related to the marketing of our products, but are useful for our total activity and improving our position with these critical investigators. It took us more than one year to respond to this simple request for a sample to be used for laboratory study only, even though this investigator was willing to sign documents controlling his use of the material. In the end the sample was sent directly from Indy to the investigator, with Indy contacting him. We lost a good opportunity to establish a relationship with the doctor and also to enhance our reputation locally. As a comparison, our competitor just telephoned its headquarters, explaining the request, and supplied the sample within a few weeks.

Regarding differences remaining between U.S. and OUS operations, a European manager made this comment.

As a company we're getting more and more global, especially at the top. But from the perspective of the working level, we're still a U.S. company. Take, for example, the case of benefits. In the United States, employees in the pharmaceuticals business all the way down the organization are part of the contingent compensation program, or companywide deferred bonus program. Overseas, only certain levels of management and above enjoy this benefit. In the United States, performance awards and stock option programs are provided down to the manager level, a benefit not extended to OUS staff at similar titles. We're not treated equally in these areas.

According to a U.S. personnel executive,

Bonus and equity programs are much more limited for OUS staff than for U.S. staff. We have different components making up our compensation and benefits programs around the world. We try to tailor the programs to be competitive in the local markets. The difference works both ways. In OUS markets, we often extend automatic wage-indexing programs and other benefits, such as company cars, that are not offered in the United States. However, we do recognize this as an area that we have to study carefully, and we don't have any final answers yet. As part of our effort, an international job evaluation and ranking program has been developed. It provides a mechanism for comparing positions within both OUS operations and U.S. operations. This was a significant step in recognizing and rewarding OUS employees.

Further comments from an OUS staff on this differentiation were as follows.

Most of the current rotation of staff is within overseas operations or from overseas operations to Indy. Sometimes, when a U.S. employee is sent overseas, it's viewed as to 'correct' a problem. This creates a we-they situation. Few, if any, U.S. executives are given the opportunity to work overseas and broaden their understanding, which may be useful to change the orientation of the domestic operations. In some way, there has to be a balance of staff movement around the world so that we can establish a common perspective.

According to a U.S. personnel executive,

U.S. staff are sent overseas to bring corporate perspective and knowledge that may not exist at an affiliate operation. Staff movement around the world can establish a common perspective, as well as broaden understanding.

One overseas manager commented on the objective of globalization as follows,

When we really think about it, what is a global company? From my perspective, the essence is having some basic core elements that hold it together but still allow the flexibility to operate in national environments. Becoming global is not something you do just from some grand structure or strategy. You have to build a global company piece by piece, putting all the pieces together until finally it becomes truly global. Some of the pieces that hold you together are the values and culture, unity of purpose, and corporate resources that you share. But you have to let the various operations do what is appropriate in their environment. This involves building strong national organizations and bridging them together into a worldwide structure.

Top management at Indy also commented on Lilly's status. According to Gene Step,

Over the years, we've seen many players come and go in this industry. Since the 1950s, Lilly has been the only company consistently ranked among the top suppliers in the United States. The reason for this is that our business has been built on balance, with no single product accounting for more than 20% of our total sales. If you look at any therapeutic category we've gone into, we've been able to establish a leadership position, and stay there. Stability is, and will continue to be, the base of our business.

In our expansion around the world, we are a little less than half way there, and our further development will be based on the continuing flow of good products. In terms of our market share, we are only about a quarter of the way to achieving our objectives. But in terms of putting the basic infrastructure resources in place, we are about two-thirds of the way done. As we launch new products, we will continue to get better at it and this will advance our drive toward being a world leader in our industry.

Vaughn Bryson, executive vice president, commented as follows on the increasing challenges facing the company in the 1990s.

Many of the major challenges we will face in the 1990s relate to issues of operating scale. At the end of the 1980s, each new drug introduced cost about \$200 million to develop. By the year 2000, we expect the required investment to increase to \$400-\$500 million per new drug. This puts tremendous pressure on us to continue to build our business to give our new products a reasonable chance of success. In the 1990s, we have to be successful in all aspects of our operations in order to be able to afford the commitment to R&D necessary to remain competitive.

Dick Wood summarized the company's position as follows,

Adapting your organization to a changing environment is a process you never really finish. We have now put in place the organization to be an effective worldwide player based on the current environment. As we introduce new products, the effectiveness of our organization will become apparent. We still have to keep building, but the emphasis will be on reinforcing our presence, especially our marketing presence, throughout the world. A worldwide perspective is firmly entrenched throughout the company.

When I look ahead at our future, I feel good about what we're doing, but we do have a number of challenges. The environment for the pharmaceuticals industry is continuing to become more complex. In addition to the increasing requirements and resource commitments necessary to be a global competitor, we see growing government involvement in the industry. This will have a significant impact on the way we do business.

We as a company also have to consider how far to diversify our activities. Our core strength is our ability to manage the scientific process in the field of health care. We are committed to building our future in fields where we can utilize and build on this core strength. This will direct what new businesses or markets we get into.

Exhibit 1 Corporate Mission

Eli Lilly and Company is a research-based corporation that develops, manufactures, and markets human medicines, medical instrument systems, diagnostic products, and agricultural products.

To guide its affairs, the company follows certain fundamental principles. These principles are as follows:

- The company is committed to the discovery and marketing of innovative products of the highest quality that offer benefits to customers in all of our markets.
- The company is dedicated to the highest levels of ethics, integrity, and excellence in research, manufacturing, marketing, and all other phases of its operations.
- The company recognizes a primary responsibility to its employees because of the key role employees play in the achievement of corporate goals.
- The company's objective is to attract and retain outstanding people at all levels of the organization. It is committed to fair and equitable treatment of all employees and to policies and programs that offer the opportunity for employees to develop meaningful and rewarding careers.
- The company feels an obligation to be a good corporate citizen wherever it operates.

Exhibit 2 Summary of Financial Data, 1984-1988 (\$ millions, except per share data)

	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>	<u>1984</u>
Consolidated Statements of Income					
Net sales	\$4,070	\$3,644	\$3,323	\$2,919	\$2,786
Cost of sales	\$1,337	\$1,303	\$1,225	\$1,078	\$
R&D	\$ 541	\$ 466	\$ 420	\$ 364	\$ 335
Marketing	\$ 789	\$ 657	\$ 571	\$ 502	\$
General administration	\$ 356	\$ 362	\$ 270	\$ 248	\$
Restructuring	\$ -	\$ 272	\$ -	\$ -	\$ -
Other income-net	<u>(\$ 69)</u>	<u>(\$ 11)</u>	<u>(\$ 7)</u>	<u>(\$ 25)</u>	<u>\$ 24)</u>
	\$2,954	\$3,049	\$2,479	\$2,167	\$2,053
Income from continuing operation before taxes	\$1,116	\$ 595	\$ 843	\$ 752	\$ 733
Income taxes	<u>\$ 355</u>	<u>\$ 184</u>	<u>\$ 302</u>	<u>\$ 258</u>	<u>\$ 265</u>
Income from continuing operations	\$ 761	\$ 411	\$ 541	\$ 494	\$ 468
Income from discontinued operations	<u>\$ -</u>	<u>\$ 233</u>	<u>\$ 17</u>	<u>\$ 24</u>	<u>\$ 22</u>
Net income	\$ 761	\$ 644	\$ 558	\$ 518	\$ 490
Earnings Per Share of Common Stock					
Continuing operations.	\$ 5.33	\$ 2.83	\$ 3.77	\$ 3.46	\$ 3.18
Net income	\$ 5.33	\$ 4.41	\$ 3.89	\$ 3.62	\$ 3.33
Dividends paid	\$ 2.30	\$ 2.00	\$ 1.80	\$ 1.60	\$ 1.49
Financial Position					
Current assets	\$2,415	\$2,724	\$2,072	\$1,940	\$1,828
Current liabilities	\$1,289	\$1,448	\$1,115	\$1,017	\$1,045
Working capital	\$1,126	\$1,276	\$ 957	\$ 923	\$ 783
Current ratio	1.9	1.9	1.9	1.9	1.7
Other assets	\$1,041	\$ 888	\$ 996	\$ 640	\$ 536
Property and equipment	\$1,807	\$1,643	\$1,528	\$1,374	\$1,280
Total assets	\$5,263	\$5,245	\$4,596	\$3,954	\$3,644
Long-term debt	\$ 388	\$ 366	\$ 395	\$ 239	\$ 117
Deferred income taxes	\$ 235	\$ 298	\$ 298	\$ 282	\$ 239
Other noncurrent liabilities	\$ 126	\$ 101	\$ 48	\$ 28	\$ 23
Shareholder equity	\$3,225	\$3,043	\$2,740	\$2,388	\$2,221
Long-term debt as percent of equity	12.0%	12.0%	14.4%	10.0%	5.2%
Supplementary Data					
Return on shareholder equity	24.3%	22.3%	21.8%	22.5%	22.6%
Return on assets	14.8%	13.2%	13.1%	13.6%	13.9%
Number of employees	26,700	25,700	25,400	24,300	24,900
Sales per employee (thousands)	\$152.4	\$141.8	\$130.8	\$120.1	\$111.9
Income per employee (thousands)	\$ 28.5	\$ 25.0	\$ 22.0	\$ 21.3	\$ 19.7
Capital expenditures	\$ 372	\$ 344	\$ 283	\$ 207	\$ 205
Depreciation	\$ 204	\$ 184	\$ 171	\$ 130	\$ 115

Source: Eli Lilly and Company, 1988 Annual Report

Exhibit 3 Summary of Industry and Geographic Financial Data

<u>Industry Data</u>		<u>1988</u>	<u>1987</u>	<u>1986</u>
Net Sales	Human health			
	Antibiotics	\$1,351	\$1,346	\$1,296
	Diabetic care products	\$ 446	\$ 391	\$ 349
	Medical instruments	\$ 592	\$ 513	\$ 413
	All other	\$ 883	\$ 645	\$ 567
	Total	\$3,272	\$2,895	\$2,624
	Agriculture	\$ 798	\$ 749	\$ 699
	Total net sales	\$4,070	\$3,644	\$3,323
Operating Profit	Human health	\$ 969	\$ 672	\$ 835
	Agriculture	\$ 126	(\$ 21)	\$ 53
	Total	\$1,095	\$ 651	\$ 888
Identifiable Assets	Human health	\$3,172	\$2,997	\$2,841
	Agriculture	\$ 787	\$ 724	\$ 766
	Corporate	\$1,304	\$1,534	\$ 759
	Discontinued segments	-	-	\$ 230
	Total assets	\$5,263	\$5,255	\$4,596
Capital Expenditures	Human health	\$ 243	\$ 248	\$ 217
	Agriculture	\$ 93	\$ 70	\$ 47
	Corporate	\$ 36	\$ 12	\$ 5
	Discontinued segments	\$ -	\$ 14	\$ 14
	Total	\$ 372	\$ 344	\$ 283
<u>Geographic Data</u>		<u>1988</u>	<u>1987</u>	<u>1986</u>
Net Sales	Unites States			
	Unaffiliated customers	\$2,565	\$2,334	\$2,233
	Transfers to other regions	\$ 419	\$ 386	\$ 358
	Total	\$2,984	\$2,720	\$2,591
	Europe, Middle East, Japan			
	Unaffiliated customers	\$1,110	\$ 993	\$ 825
	Transfers to other regions	\$ 172	\$ 144	\$ 139
	Total	\$1,282	\$1,137	\$ 964
	Other			
	Unaffiliated customers	\$ 395	\$ 317	\$ 265
	Transfers to other regions	\$ 3	\$ 1	\$ 5
	Total	\$ 398	\$ 317	\$ 270
	Eliminations (transfers)	\$ 594	\$ 532	\$ 502
	Net sales	\$4,070	\$3,644	\$3,323
Income from continuing operations	United States	\$ 791	\$ 371	\$ 639
	Europe, Middle East, Japan	\$ 263	\$ 185	\$ 174
	Other	\$ 72	\$ 42	\$ 35
	Eliminations & adjustments	(\$ 10)	(\$ 3)	(\$ 4)
	Total	\$1,116	\$ 595	\$ 843
Total Assets	United States	\$3,972	\$4,116	\$3,561
	Europe, Middle East, Japan	\$1,366	\$1,462	\$1,078
	Other	\$ 238	\$ 235	\$ 207
	Eliminations & adjustments	(\$ 313)	(\$ 558)	(\$ 251)
	Total	\$5,263	\$5,255	\$4,596

Source: Eli Lilly and Company, 1988 Annual Report.

Exhibit 4 Major ProductsMajor Marketed Products:

<u>Brand Name</u>	<u>Therapeutic Category</u>	<u>Estimated Therapeutic Indications</u>	<u>Sales 1987(mil.)</u>
Ceclor	Cephalosporin	Infections	\$ 515
Keflex/Keftabs	Cephalosporin	Infections	\$ 295
Insulin	Insulin	Diabetes	\$ 185
Humulin	Human Insulin	Diabetes	\$ 170
Vancocin	Glycopeptide	Gram Positive	\$ 155
		Antibiotic	
Darvon	Analgesic	Pain Relief	\$ 135
Dobutrex	Cardio stimulant	Acute Heart Failure	\$ 103
Nebcin	Aminoglycoside	Infections	\$ 100
	Antibiotic		
Kefzol	Cephalosporin	Infections	\$ 75
Mandol	Cephalosporin	Infections	\$ 70
Tazidime	Cephalosporin	Infections	\$ 40
Humatrobe	Pituitary Hormones	Growth Hormones	\$ 7
Axid	Antagonist	Gastric	\$ 5
Prozac	Antidepressant	Depression	\$ 1

R & D Pipeline:

<u>Compound</u>	<u>U.S. Therapeutic Category</u>	<u>OUS Launch Date</u>	<u>5th-Year Launch Date</u>	<u>Sales Potential</u>
Fluoxetine (Prozac)	Antidepressant	1989	1989	\$ 40
	Alcoholism	1991	1991	?
	Antismoking	1992	1992	?
	Antiobesity	1990	1990	\$ 450
Pinacidil (Pindac)	Peripheral Vasodilator	1988	1988	\$ 100
Cefuroxime Axetil	Cephalosporin	1988	NA	\$ 120
Pergolide	Antiparkinsonian	1988	NA	\$ 50
Indecainide	Antiarrhythmic	1989	1989	\$ 50
Pro-insulin	Insulin	1989	1989	\$ 100
LY146032	Antibiotic	1989	1989	\$ 125
Tomoxetine	Antidepressant	1990	1991	\$ 150
YM12617	Alpha Antagonist	1990	1991	\$ 100
LY163502	Sexual Dysfunction	1991	1991	?
LY121059	Antifungal	1991	1991	?
LY195448	Anticancer	1992	1992	?
LY186655	Antiasthma	1992	1992	?
KS1/4-DAVLB	Anticancer (colon)	1991	1991	\$ 14
LY163892	Antibiotic	?	?	?
LY186641	Anticancer	?	?	?
LY188011	Anticancer	?	?	?
LY264618	Anticancer	?	?	?

Source: Eberstadt Fleming (now Robert Fleming, Inc.): Pharmaceutical Products Worldwide

Exhibit 5 Total World Pharmaceuticals Market

		1988					
		Market	% of	87/88	83/88		
		(mil.)	Total	Growth	CAGR		
Region							
North America		\$ 42,082	27.3%	+14.9%	+13.0%		
Western Europe		\$ 43,301	28.1%	+13.8%	+15.7%		
Africa, Asia, Australia		\$ 44,051	28.6%	+17.5%	+16.3%		
Latin America		\$ 6,817	4.4%	+ 9.5%	+ 4.2%		
Eastern Europe		\$ 18,000	11.7%				

Rank	Market	Market (bil.)	87/88 Growth (US\$)	87/88 Growth (LC)	87/88 Growth (real)	83/88 CAGR (US\$)	83/88 CAGR (LC)	83/88 CAGR (real)
1	United States	\$ 39.0	+ 15%	+ 15%	+ 7%	+ 12%	+ 12%	+ 4%
2	Japan	\$ 30.6	+ 19%	+ 6%	+ 14%	+ 19%	+ 5%	+ 11%
3	Germany	\$ 11.5	+ 11%	+ 8%	+ 6%	+ 16%	+ 6%	+ 5%
4	France	\$ 8.7	+ 16%	+ 15%	+ 13%	+ 19%	+ 9%	+ 7%
5	Italy	\$ 8.1	+ 15%	+ 15%	+ 12%	+ 20%	+ 15%	+ 9%
6	U.K.	\$ 4.4	+ 22%	+ 13%	+ 9%	+ 11%	+ 9%	+ 8%
7	Canada	\$ 3.0	+ 25%	+ 16%	+ 6%	+ 14%	+ 16%	+ 7%
8	Spain	\$ 2.9	+ 22%	+ 16%	+ 13%	+ 15%	+ 10%	+ 7%
9	Brazil	\$ 1.9	+ 8%	+607%	- 12%	+ 4%	+200%	+ 18%
10	India	\$ 1.9						
11	Korea	\$ 1.8	+ 32%	+ 18%	+ 18%	+ 4%	+ 5%	+ 6%
12	Mexico	\$ 1.6	+ 24%	+103%	+ 14%	+ 3%	+288%	+ 15%
13	Argentina	\$ 1.3	+ 6%	+387%	+ 8%	+ 3%	+288%	+ 15%
14	Belgium	\$ 1.3	+ 10%	+ 9%	+ 7%	+ 16%	+ 7%	+ 4%
15	Australia	\$ 1.1	+ 34%	+ 20%	+ 16%	+ 8%	+ 15%	+ 9%
16	Netherlands	\$ 1.0	+ 8%	+ 5%	+ 4%	+ 19%	+ 9%	+ 7%
17	Switzerland	\$ 1.0						
18	Sweden	\$ 0.9	+ 16%	+ 12%	+ 9%	+ 14%	+ 9%	+ 5%
19	Austria	\$ 0.8	+ 14%	+ 11%	+ 11%	+ 17%	+ 7%	+ 6%
20	South Africa	\$ 0.8	+ 13%	+ 26%	+ 8%	+ 4%	+ 21%	+ 3%

LC: local currency

Real: constant price

Source: IMS International, Inc.

Exhibit 6 Drug Discovery, Approval, and Marketing Process

Preclinical		Clinical				
Synthesis	IND Filing	NDA Submission				NDA Approval
Chemical Lab.	Preclinical (animal) Pharmacology	Phase 1: Pharmacological Profile	Phase 2: Efficacy Testing	Phase 3: Patient Clinical Trials	Phase 3: (cont'd)	Phase 4: Post-Launch Studies

Synthesis	IND Filing	NDA Submission				NDA Approval
Chemical Lab.	Preclinical (animal) Pharmacology	Phase 1: Pharmacological Profile	Phase 2: Efficacy Testing	Phase 3: Patient Clinical Trials	Phase 3: (cont'd)	Phase 4: Post-Launch Studies

Marketing:

Market Research ----->
 Market Planning ----->
 Marketing ----->

Manufacturing:

Manufacturing Development ----->
 Bulk Manufacturing ----->
 Fill & Finish ----->

Time:

? <-- 3 years--> <----- 4 years -----> <-- 2 years -->

Compound Attrition

10,000 -----> 1,000 -----> 10 -----> 5 -----> 1 -----> 0.9

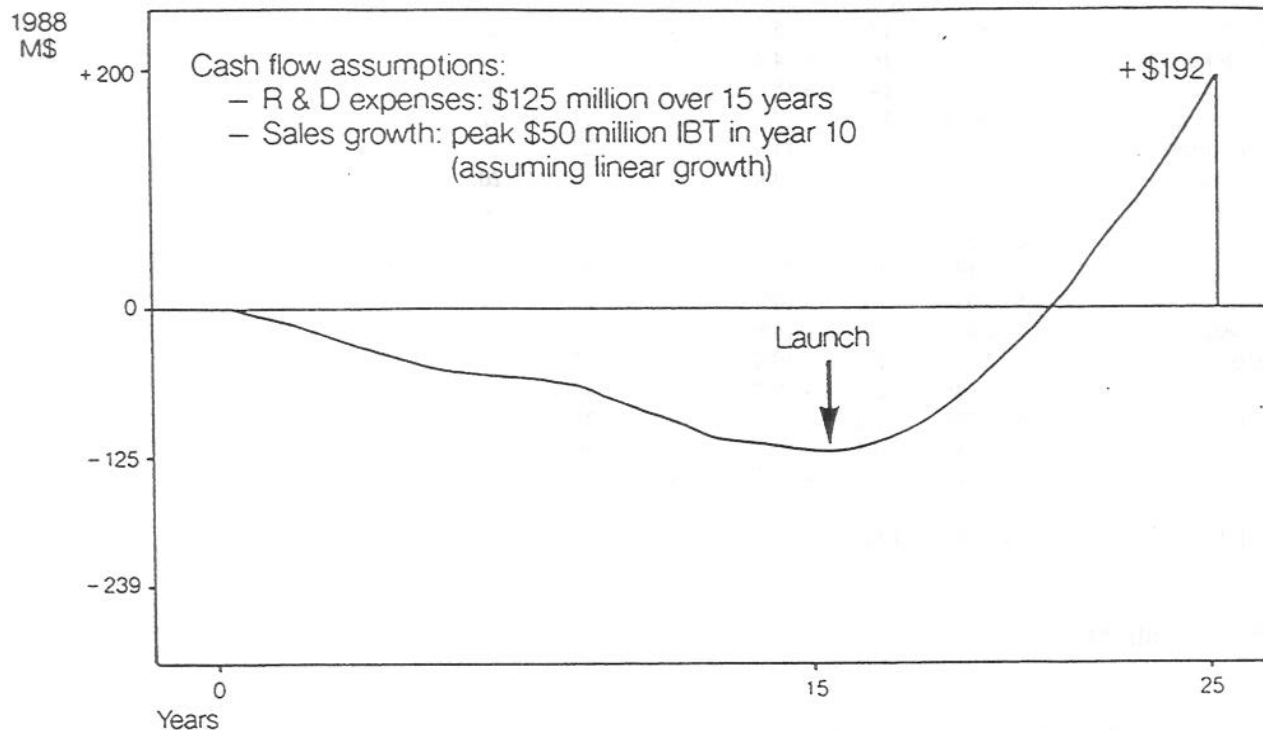
Development Costs:

<----- \$155 million-----> <----- \$75.2 million----->

(source: adapted from DiMasi, J.A., Henson, R.W., & Grabowski, H.G. (1991), "The Cost of Innovation in the Pharmaceutical Industry," Journal of Health Economics, June. And interviews.

Exhibit 7 New Drug Development Cost

Recovery of Investment



One Product Launch

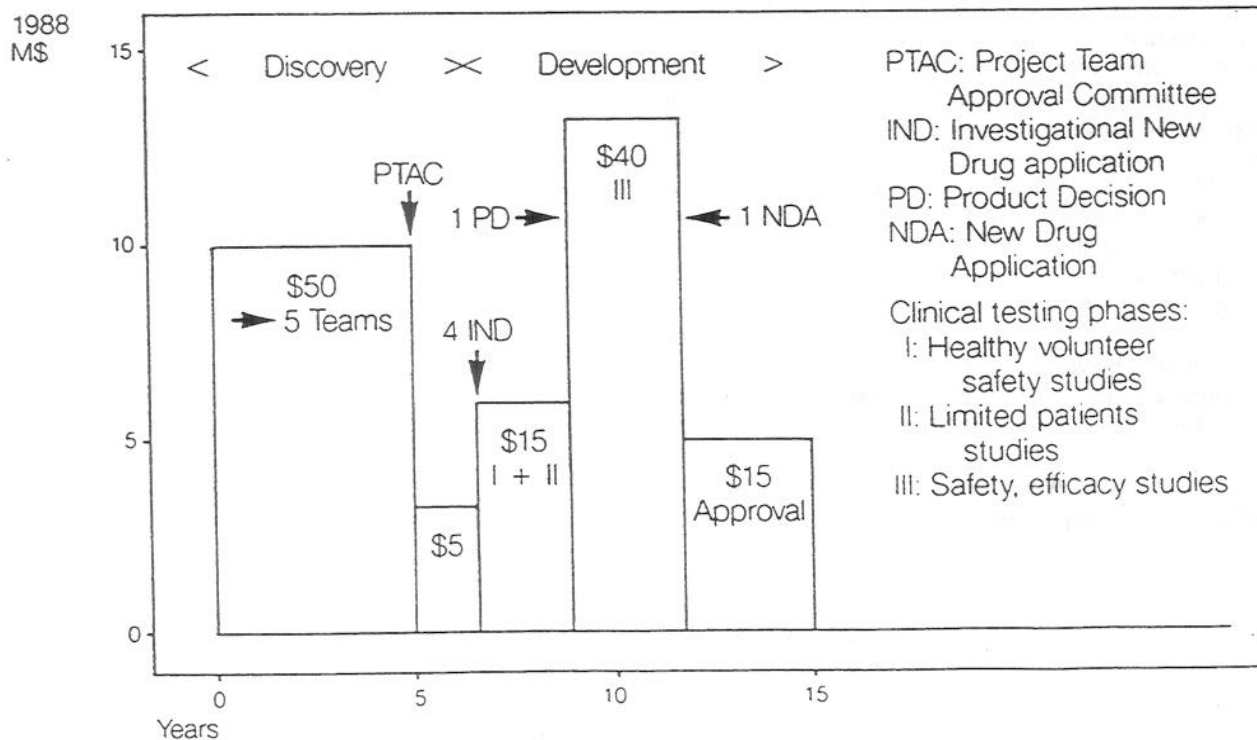


Exhibit 8 Major Therapeutic Classes, 1988

Therapeutic Class	Sales	% of		Growth Rate	-----Percent of Total-----			
		Total			Eur.	N Am.	AAA	LAm
Cardiovascular System	\$ 18,862	17.4		+15%	44	30	23	3
Alimentary Tract/Metabolism	\$ 17,995	16.6		+14%	34	28	33	5
General Anti-Infectives	\$ 15,339	14.1		+15%	27	28	41	5
-- Systematic Antibiotics	\$ 13,044	12.0		+14%	26	27	42	5
-- Cephalosporins	\$ 5,723	5.3		+11%	17	29	53	2
Central Nervous System	\$ 11,862	10.9		+13%	35	41	20	5
Respiratory System	\$ 8,875	8.2		+19%	37	33	24	6
Musculo-Skeletal System	\$ 7,322	6.7		+15%	32	29	34	5
Blood/Blood-forming Organs	\$ 6,191	5.7		+22%	36	20	42	2
Dermatological	\$ 5,053	4.6		+14%	36	37	21	7
Genito-Urinary System	\$ 4,487	4.1		+14%	34	45	16	6
Anticancer Agents	\$ 2,887	2.7		+19%	19	23	57	1
Sensory Organs	\$ 2,346	2.2		+15%	28	46	23	4
Systemic Hormones	\$ 1,728	1.6		+15%	44	21	31	5
Antiparasites	\$ 346	0.3		+16%	18	29	26	26
Other	\$ 5,417	5.0		+22%	35	24	38	4
TOTAL MARKET	\$108,709	100.0		+16%	35	31	30	5

Sales in millions of U.S. dollars

Source: IMS International, Inc.

Exhibit 9 Therapeutic Subclass Rank by Region

World Rank	Therapeutic Sub-Class	Europe	North America	AAA	Latin America
1	Cephalosporins	7	2	1	5
2	Antipeptic Ulcerants	3	1	2	6
3	Nonsteroid Antirheumatics	2	3	3	1
4	Plain Calcium Antagonists	6	4	5	16
5	Bronchodilators/Antiasthma	5	7	6	7
6	Nonnarcotic Analgesics	4	6	15	2
7	Peripheral Vasodilators	1	65	8	4
8	Plain Beta-blocking Agents	11	5	16	38
9	Broad Spectrum Penicillins	8	14	11	3
10	Plain Ace Inhibitors	10	10	19	32
11	Tranquilizers	16	8	43	9
12	Diuretics	9	11	47	24
13	Nontopical Contraceptives	19	9	113	15
14	Topical Antirheumatics	20	100	7	52
15	Cholesterol Reducers	17	15	35	58

AAA: Asia, Africa, and Australia

Source: IMS International, Inc.

Exhibit 10 Pharmaceuticals Supplier Rankings

	Worldwide		North America	Europe	AAA	Number of Top 7 Markets Ranked:	
	1987	1978				Top 10	Top 25
Merck (M.S.D.)	1	4	1	5	9	6	7
Ciba-Geigy	2	2	9	3	NA	6	7
Glaxo	3	28	5	2	NA	4	6
Hoechst	4	1	NA	1	15	3	6
American Home	5	5	2	NA	NA	2	4
Smithkline	6	12	7	13	NA	2	5
Pfizer	7	6	8	NA	NA	1	5
Johnson & Johnson	8	14	4	12	NA	1	6
Bayer	9	13	NA	4	11	3	6
Sandoz	10	7	NA	8	14	2	7
Eli Lilly	11	8	3	NA	NA	1	3
Bristol-Myers	12	11	6	NA	NA	1	3
Roche	13	3	NA	10	NA	1	4
Boehringer	14	9	NA	7	NA	1	4
Upjohn	15	17	9	NA	NA	2	2

AAA: Asia, Africa, and Australia

NA: not ranked in top 15 in the region

Source: IMS International, Inc.

Exhibit 11 Market Share by Corporate Nationality (market share percentage)

Supplier Origin	Market													
	—U.S.—		—Japan—		—Germany—		—France—		—Italy—		—U.K.—		—Canada—	
	'83	'87	'83	'87	'83	'87	'83	'87	'83	'87	'83	'87	'83	'87
U.S.	80.0	75.8	10.7	9.6	18.8	18.0	21.6	23.1	20.1	22.0	37.3	32.9	64.3	60.8
Japan	-	-	80.3	79.9	-	-	-	-	-	-	-	-	-	-
W. Germany	4.2	4.3	4.7	5.1	55.6	56.3	10.7	10.6	15.1	13.8	9.4	10.5	4.9	6.0
France	-	-	-	-	3.9	3.8	51.3	48.8	3.3	2.6	3.7	3.5	2.0	2.2
Italy	0.5	0.6	0.1	0.1	1.2	1.5	-	-	43.0	43.0	-	-	-	-
U.K.	6.0	9.9	0.9	1.3	4.2	4.9	4.3	5.8	7.8	7.1	35.3	39.1	7.5	10.1
Canada	-	-	-	-	-	-	-	-	-	-	-	-	7.4	6.8
Switzerland	8.5	8.2	3.0	3.5	9.8	8.2	7.5	6.8	10.2	9.2	7.3	6.8	9.5	9.3
Sweden	0.4	0.5	0.1	0.2	1.6	2.4	-	-	0.9	0.6	1.7	2.1	1.8	1.4
Netherlands	0.2	0.3	0.2	0.2	-	-	1.3	1.3	-	-	-	-	-	-
Belgium	0.2	0.2	-	-	1.7	1.5	1.8	2.0	-	-	1.0	1.3	-	-
Denmark	-	-	-	-	-	-	0.5	0.5	-	-	2.4	2.1	1.7	2.6
Austria	-	-	-	-	-	-	-	-	0.4	0.5	-	-	-	-

Source: IMS International, Inc.

Exhibit 12 World Pharmaceutical Suppliers

Company	1987 Pharm. Sales	5-Year Compound Growth	% of Corp. Sales	% Corp. Sales in Home Country	New Prod. Sales as % Total (1987)	Corporate R % D Expenses (1988)
Merck (M.S.D.)	\$4,240	17%	84%	53%	A	\$ 750
Glaxo	\$3,160	31%	98%	11%	A	\$ 580
Ciba-Geigy	\$3,020	19%	29%	min.	B	\$1,100
Hoechst	\$2,700	10%	18%	24%	B	\$ 600
American Home	\$2,420	9%	47%	69%	B	\$ 265
Bayer	\$2,370	18%	10%	20%	B	\$1,400
J & J	\$2,350	12%	26%	51%	B	\$ 675
Smithkline	\$2,300	10%	42%	61%	C	\$ 495
Pfizer	\$2,260	9%	46%	54%	C	\$ 475
Sandoz	\$2,230	14%	45%	min.	A	\$ 400
Bristol-Myers	\$2,101	11%	33%	71%	D	\$ 400
Eli Lilly	\$2,090	8%	70%	73%	C	\$ 600
Roche	\$1,940	8%	40%	min.	D	\$ 800
Squibb	\$1,710			54%		\$ 290
Schering	\$1,670		55%	20%		\$ 360
Upjohn	\$1,650	15%	59%	60%	B	\$ 380

Data are estimates in millions of dollars

New Product Sales as % of Total:

A: >25%

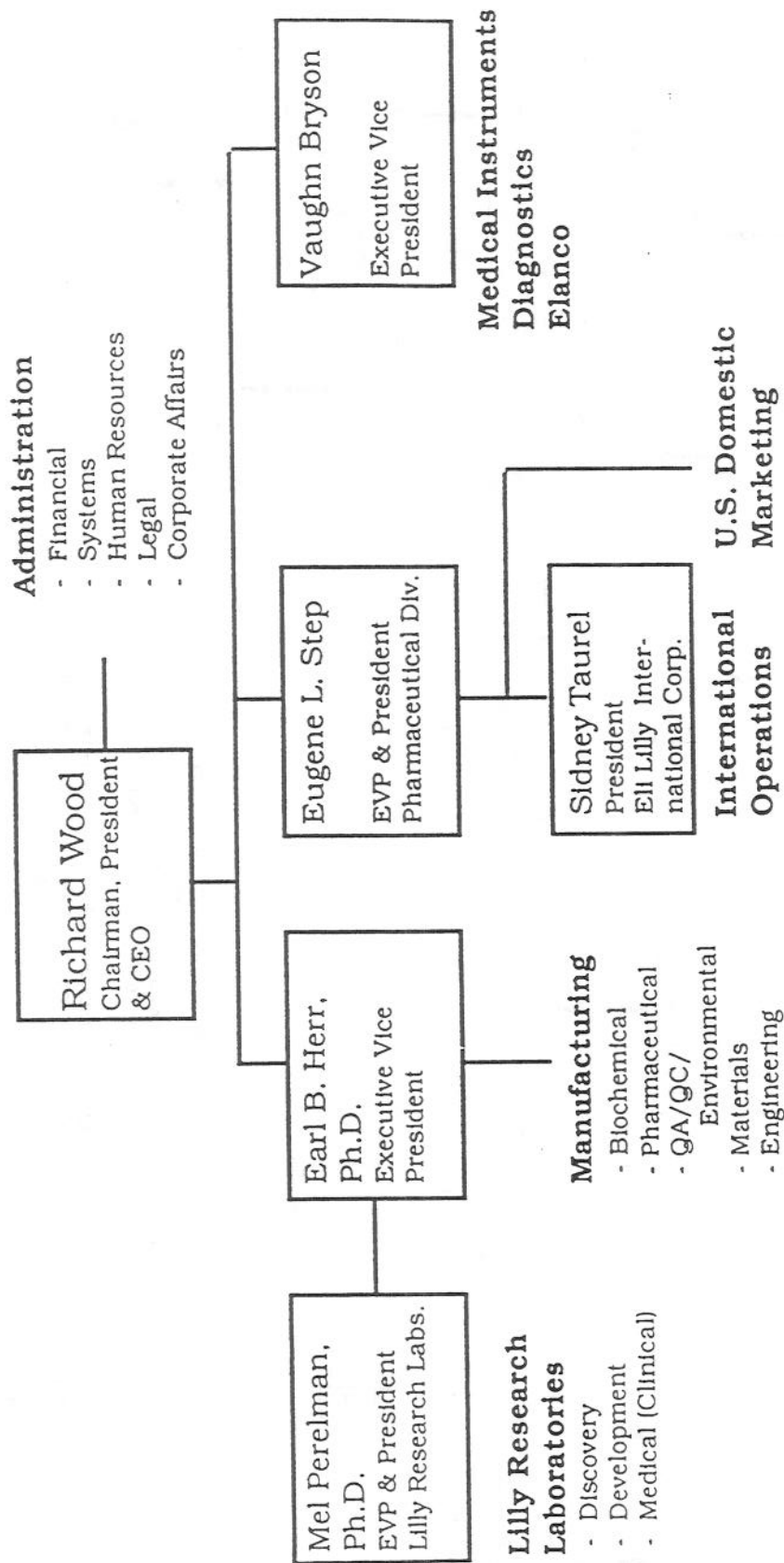
B: 15% - 25%

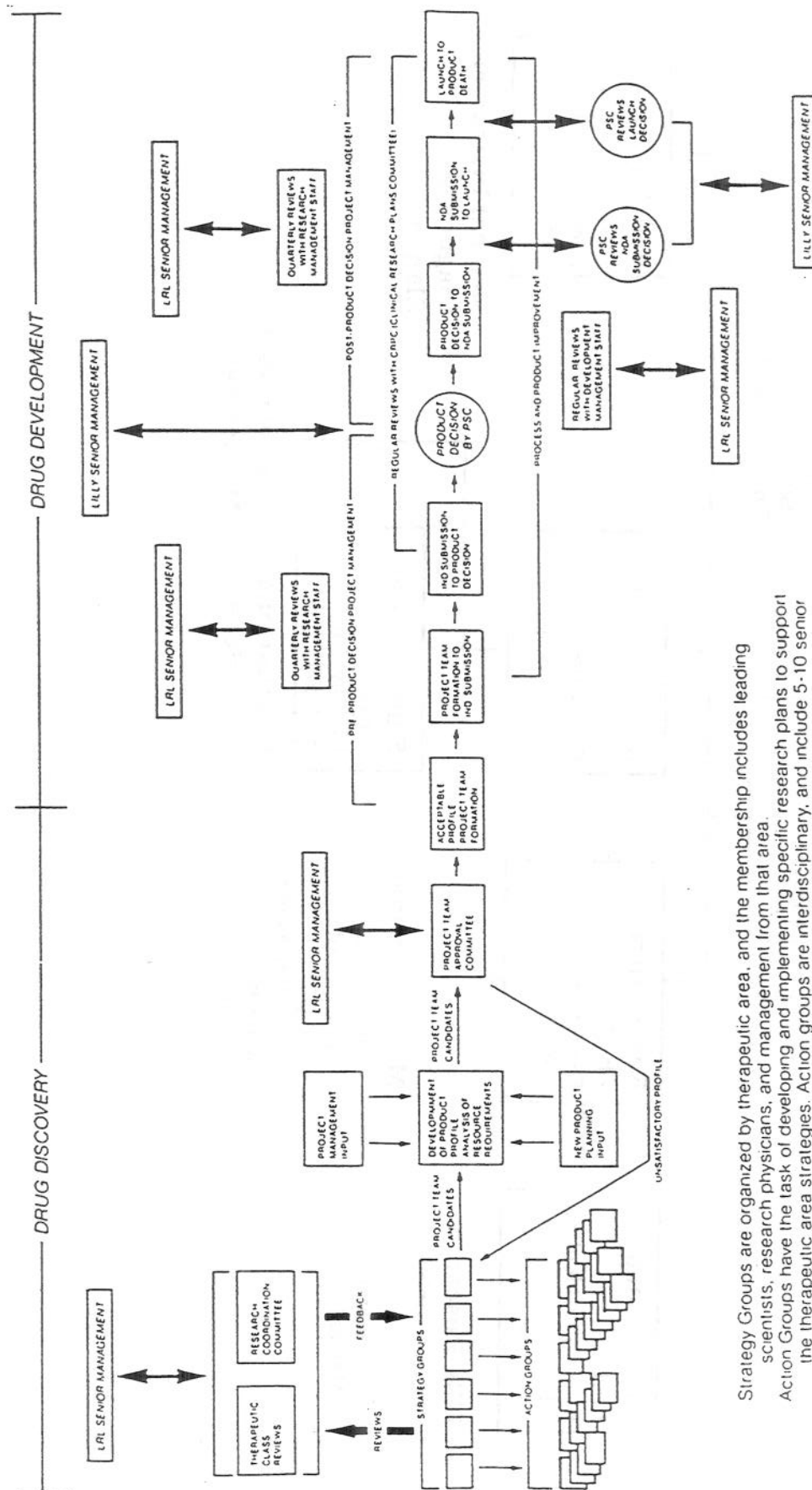
C: 10% - 15%

D: <10%

Source: annual reports and company documents

Exhibit 13 Description of Eli Lilly Organizational Structure (Compiled version for case use)





Strategy Groups are organized by therapeutic area, and the membership includes leading

scientists, research physicians, and management from that area.

Action Groups have the task of developing and implementing specific research plans to support

on Groups have the task of developing and implementing the therapeutic area strategies. Action groups are interdisciplinary, and include 5-10 senior

the microap-
scientists.

Project Teams are responsible for specific product profiles developed by a Strategy Group. Project

Management, and New Product Planning. A profile includes a description of current

of a compound and criteria the compo

IND Investigational New Drug application

PSC Product Strategy Committee

NDA New Drug Application



13

WHARTON REPROGRAPHICS

Swissair's Alliances (A)

High in the mountains of Davos Switzerland, Otto Loepfe, president of Swissair, had just spent a few days meeting with world leaders and experts discussing politics and the economy. The consequences of deregulation in Europe as well as competing with "mega corporations" in the 1990s were dominant themes at the conference. While such issues were abstract for many of the CEOs at Davos in February 1992, they were real and urgent for Loepfe. In only ten months' time, the creation of the European Community Free Trade Market with a substantially liberalized aviation scheme would become reality.

To cope with liberalization, Swissair developed a strategy of alliances over the last several years. To serve the European market, as well as gain economies in fleet purchase and maintenance, Swissair negotiated its European Quality Alliances (EQA) in 1989 with Scandinavian Airlines (SAS), Finnair, and Austrian Airlines. To manage better their marketing and operations in North America and Asia, Swissair began a separate "Global Excellence Alliance" with Delta and Singapore Airlines (SIA) in the same year. With both partners, Swissair swapped equity and sought to provide customers with seamless service.

While much progress had been made, several critical issues had surfaced in recent months. Delta had just purchased most of Pan American Airlines' direct routes to Europe, throwing into question the role of Swissair in Delta's future plans. In addition, Finnair had withdrawn from the EQA. Loepfe noted that "originally my goal was that all of my alliance partners would work closer together over time, ultimately functioning like a global airline." However, while Loepfe remained very optimistic, he now had to address several questions: Would the Pan Am deal impact the global alliance? And is now the time to integrate further the separate alliances, maintain the status quo, seek new partners, or consider a merger?

Swissair

The Swiss Air Transport Co. Ltd. was founded in 1931 to fly between Switzerland and a handful of central European locations. By 1949, the company had become the Swiss flag airline, and had inaugurated long-haul inter-continental service over the North Atlantic. By 1970, Swissair also served destinations in Asia, Africa, and South America.

In 1991, Swissair was among the top 20 airlines in international revenue-passenger-kilometers flown and among the top ten in international passengers carried. The carrier had revenues of \$2.2

Research Associate Eric J. Vayle prepared this case under the supervision of Professor David B. Yoffie as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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billion, with a cash flow strong enough to self-finance between 50% and 100% of its expenditures for aircraft and other capital equipment each year. It owned several subsidiaries, including two charter airlines and the largest travel agent in Switzerland. Unlike many European airlines, Swissair was not owned by the national government. Only about 22% of its equity was owned by various Swiss authorities, with the rest owned by private investors. Swissair was considered as "the most Swiss of Swiss companies" and management worked to maintain Swissair's close identification with Swiss national culture and pride. Swissair's main hub, was Zurich's Kloten airport, with European traffic also routed through Geneva.

About seven million people lived in Switzerland. Its two major cities, Zurich and Geneva, were important global business and financial centers, helping Switzerland become the wealthiest nation, per capita, in Europe. Switzerland's Gross Domestic Product was forecast to reach nearly \$175 billion in 1990, having grown steadily at between 2% and 3% per year over the previous five years. Labor markets were extremely tight in Switzerland during the period, with unemployment as low as 0.5 percent. Despite this, Swiss inflation was low and stable; prices rose an average of 2% per year in the 1980s. Although Switzerland had not joined the European Community (EC), almost 60% of imports and over 70% of exports were traded with her European neighbors.

Swissair's route structure in 1990 consisted of flights to over 100 destinations. Most flights were "short hauls" within Europe (Swissair carried 5.9% of European traffic in 1990), but it also flew to destinations on every continent except Australia. According to Paul Maximilian Müller, executive in charge of External Relations, "Swissair is stretched to its geographic limits. Going forward, our strategy is not to expand the number of routes we fly, but to strengthen our market share on existing routes, especially Asia and North America."

Products Government-approved prices for short haul flights between Western Europe and Switzerland were among the most expensive in Europe. Swissair concentrated on attracting international business travellers, and 70% of its customers were non-European. Despite high fares, 5.4% of passengers travelled first class on Swissair, compared to 2.0% for the average European airline. Similarly, 38.5% of Swissair's passenger flew full fare economy, while 34.8% did so on the average European carrier. Swissair's passengers were willing to pay premium fares for what one Swissair executive called "guaranteed quality from one of the premier air carriers in the world." *Quality Wins*, Swissair's motto, encouraged staff members to maintain Swissair's "fetish for excellence from maintenance to housekeeping to cuisine." Airport caterers' kitchens were supervised by Swissair's own chefs. First class meals on intercontinental flights were full-course dinners that cost Swissair almost \$100 per passenger, featuring Beluga caviar and fine wines. Flight attendants were required to be fluent in French, German and English. Unique extra comforts were provided to passengers as well; when not showing movies, video screens showed the flight's progress along a route map, as calculated by an on-board computer. Surveys showed that route maps helped most passengers to relax. On-board telephones were not available because Swissair feared they would make for a less restful flight.¹

Third-party services Swissair generated incremental revenues from fixed investments by having personnel in Swissair's kitchens in Zurich, Geneva, and Karachi perform contract catering for 40 other air carriers. Maintenance professionals were also subcontracted to other airlines, with about 50% of the capacity of its Engineering and Maintenance Division used to work on aircraft from other airlines. Swissair performed major overhaul work in Zurich on McDonnell Douglas aircraft, on Pratt & Whitney engines, and on Airbus frames and engines. It also maintained aircraft in a joint venture with Lufthansa. Contract services netted 12% of Swissair's revenues in 1989. In international locations where Swissair did not have maintenance or ground handling personnel, it typically subcontracted the work to local carriers.

Cost structure Swissair faced higher operating costs than most other European airlines (see Exhibits 1 and 2). Most employees were represented by unions, although Swissair had not experienced labor difficulties partly due to its generous personnel policy. "It is very hard to get fired at Swissair," one senior official admitted.

Swissair's fleet structure complemented its route structure, and although most of its aircraft were from McDonnell Douglas, it purchased aircraft frames from four different manufacturers to provide a wide variety of distance capabilities (see Exhibit 3). Swissair used Boeing 747's to fly intercontinental routes to North America and Asia. These craft had maximum ranges of over 10,000 km, but due to the cargo configurations that Swissair used, Asia-bound 747's from Zurich could fly nonstop only as far as Bangkok, Thailand, about an hour and a half short of Singapore. Swissair also invested heavily in aircraft maintenance. Eduard Meier, general manager for Planning in Swissair's Engineering and Maintenance Division explained, "we probably put more maintenance into planes than most of our competitors and we often do routine maintenance overnight so that our planes are out of service far less and for shorter periods of time. We also sell our planes very young (average age for a Swissair plane was seven years in 1990, compared to an industry average of 12 years)."

Like most major international airlines, Swissair invested heavily in Computerized Reservation Systems (CRSs) during the 1980s, which it rented to travel agents to access its flight and fare schedules. It developed Travisswiss, a domestic and international CRS for use in Switzerland. Swissair was also a founding member of Galileo, a CRS developed jointly by several European international carriers and marketed to travel agents worldwide. The third CRS employed by Swissair was Apollo, developed by United Airlines. Swissair owned 11% of Covia, the company that ran the Apollo CRS.

Historically, Swissair's central location in Europe combined with its reputation for service allowed the airline to prosper. In an internationally regulated industry where prices and competition were controlled, Swissair had successfully differentiated itself from major competitors. However, airline deregulation in the United States led to fierce price wars and an erosion of profits, and set in motion new economic and political forces in the international airline business in the early 1990s which would change Swissair's competitive position forever.

The International Airline Industry

In 1989, there were 157 member airlines in the International Air Transport Association (IATA) which transported approximately 858 million passengers in 1989, of which 25% flew internationally. Operating revenues of the world's airlines had grown 10.1% annually between 1984 and 1989, reaching \$182.5 billion in 1989.

Government Regulations

Perhaps the most significant issue for Swissair was the possibility that deregulation would spread globally. In fact, by 1990, limited global deregulation became a reality: governments of many industrialized nations in Europe and Asia were loosening restrictions on operating rights and fare pricing, while retaining regulation of traffic safety and security.

Historically, the disbursement of operating rights to a foreign carrier for international travel was subject to a bilateral Aviation Service Agreement (ASA) between the governments of the host

¹Swissair's revenues depended heavily on cargo transport (see Exhibit 1) and expected its cargo business to continue growing throughout the 1990s. This case, however, focuses on passenger travel.

country and the carrier's country. ASAs delineated which of the five internationally recognized "freedoms of the air" would be recognized between the two countries. (See Exhibit 4 for a graphical representation of the five freedoms.) ASAs also outlined the number of carriers and flights operating between countries, restrictions on pricing, and other operational matters. In 1990, ASAs did not allow carriers from one country the right to *cabotage*, or domestic travel, within another country. Swissair, for example, could fly New York-Boston-Zurich, but could not pick up passengers in New York that planned to disembark in Boston.

Leverage in negotiations over ASAs varied with market size and location; for example, the United States had substantial leverage in negotiations because most foreign carriers wanted access to U.S. gateways.² Yet Switzerland, noted one Swissair manager, "has little leverage in ASA negotiations, partly because we have little new to offer partner countries, and partly because the government has a very liberal attitude toward signing agreements." By 1990, Switzerland had 102 ASAs, 36 of which went unused by Swissair.

ASAs also determined how airlines could set fares, with carriers required to charge the approved fare. In the past, fares collected by the carriers flying between two countries in Europe were pooled and divided equally among carriers of both nations, regardless of what percentage of traffic each airline carried. Although pooling was phased out on most European routes in the late 1980s, most fares remained subject to approval by the country of the flight's origin. Increasingly, ASAs were using more liberal "double disapproval" structures, where both governments could disapprove a fare, but neither had to approve it.

Industry Economics

Pricing was only one variable that affected a firm's profitability. It was standard for most air carriers to manage several variables, represented in the following accounting identity:

$$[\text{Revenues/} \text{RPK} \times \text{RPKs/} \text{ASKs}] - \text{Expenses/} \text{ASK} = \text{Operating Income/} \text{ASK}$$

or

$$[\text{Yield} \times \text{Load Factor}] - \text{Unit Cost} = \text{Unit Operating Income}$$

Using this identity, airlines could track the load factor needed to maintain profitability:

$$\text{Unit Cost} / \text{Yield} = \text{Breakeven Load Factor}$$

The variables were defined as follows: An "available seat kilometer" (ASK) was the total number of kilometers traveled by one seat. A "revenue passenger kilometer" (RPK) was the number of kilometers traveled by an occupied seat. The amount of revenue provided by one seat was known as the *yield* (Revenues/RPKs). Unit costs were defined as operating expenses/ASKs (operating costs were examined on an ASK basis because in the short run, most of the operating expenses of an airline—wages/benefits, fuel, equipment depreciation costs, airport access charges, etc.—varied by capacity offered rather than by the number of passengers served). A measure of occupancy rate, known as the *load factor* (RPKs/ASKs) related yield to capacity.

²Until 1989, for instance, Swissair had a monopoly on ground handling for all flights in Zurich and Geneva. The United States demanded that this monopoly be broken up in exchange for landing rights for Swissair in Atlanta and Los Angeles.

Product Lines

Although most air carriers had cargo business, over two-thirds of all traffic tonnage in 1991 was passenger traffic. Most international fliers offered three classes of service, "coach" or economy, business, and first class. The price differential between the three was substantial, and grew wider during the 1980s. Airlines also segmented the market in other ways. Carriers developed complex computer algorithms for manipulating fares, discounts, and special offers to optimize load factors while minimizing the dilution of yields. Computers analyzed flight data in a carrier's route structure and calculated how many seats should be available at a given fare level. The information was fed to travel agents via the CRS link. Commenting on the advance of yield management technology, the CEO of KLM predicted that "in the not distant future, we [will] see daily and hourly prices for our products and services."³

Production Inputs

The major portions of an airline's cost structure were labor, fuel, maintenance, and fleet procurement. The largest item was personnel: salaries, benefits, and other related expenses made up as much as one-third of a carrier's costs of operations. In 1991, airlines employed about one employee for every 885 passengers served. In most major international airlines, employees belonged to one of several different labor unions. During the 1980's, several airlines started in the United States, hoping that their nonunionized labor force would give them a cost advantage. Many of these small carriers went bankrupt or were acquired by the end of the decade. By 1990, nonunion carriers were beginning to emerge in Europe.

The second largest component of the cost structure of most carriers was fuel. Airlines had almost no leverage vis-a-vis fuel suppliers in the short term, for airlines had no way of controlling the price, or their consumption, of fuel. Maintenance and ground services also made up a substantial portion of expenses. Each body and engine type required repair personnel with specialized expertise. In general, routine maintenance was performed at home bases, but airlines needed repair capabilities across their route structure. International carriers purchased local repair capacity from competitors, or maintained satellite repair facilities. International carriers sold subcontracting services at a profit, even when they were handling the work of partners. Unlike their global counterparts, U.S. airlines handled all of their own ground services. Finally, three firms dominated the commercial plane market in 1989. Boeing was the leader, with about half the world's market; Airbus Industries, a consortium of European government-backed manufacturers had a 28% share; and McDonnell Douglas had 20%.

Distribution

Computerized Reservation Systems (CRSs) were the chief methods by which airlines influenced the air carrier selections of travel agents and passengers. By 1990, 80% of airline tickets in the United States were sold through a CRS. "Co-hosts," or carriers which rented CRS space, paid an average \$1.75 per flight segment for each flight booked on the CRS. The most successful CRS, American Airlines's Sabre system, generated about 200 bookings per month per terminal. With millions of terminals in its network, Sabre provided rates of return close to 70% for American Airlines, although some of Sabre's first-mover advantages were dwindling. While 95% of all bookings in the 1980s were sold from the first screen of the CRS, international agreements were forcing firms to have completely unbiased systems in the 1990s.

³Speech by JFA De Soet, Stockholm, Sweden; September 27, 1990.

CRS technology quickly spread globally, as most U.S. carriers rented the technology to travel agents across the world. European and Asian carriers feared that if their travel agents used American CRS technology, it would lead to greater inroads by U.S. carriers. Two European airline consortia formed to develop independent CRS technology, and in 1990, Amadeus and Galileo displayed the flight information of the various European carriers that owned them. A similar consortium of Asian carriers developed a CRS network called Abacus. Several of these CRSs were linked to one another (see Exhibit 5).

Route Structure

After the U.S. domestic industry was deregulated in 1978, most airlines replaced their government mandated domestic route structure with a hub-and-spoke route system. The hub-and-spoke system used airports in strategic locations as central hubs, through which passengers from several flights could be fed, and then transferred to outbound flights to their final destinations. Hub-and-spoke systems were adopted by carriers outside the United States in a more limited fashion; like Swissair, most European carriers had single hubs from which all flights radiated.

Swissair's Major European International Competitors

On one level, Swissair competed with all carriers that flew in and out of Switzerland; i.e., most major carriers, and all of Swissair's routes were served by at least one other airline. However, Swissair's management viewed its primary competition as the large quality-oriented European firms: Air France, Lufthansa, British Airways, KLM, and SAS.⁴

Air France Air France was the government-owned flag carrier of France, and one of the largest, most active carriers in Europe. Its route structure connected Paris to destinations in Europe, Africa, Asia, and the Americas. In 1989, Air France acquired majority interests in UTA and Air Inter, competitors for domestic passengers and for traffic between France and other European countries. Combined, the three companies had revenues in 1989 of about \$8 billion and controlled 9.2% of European traffic in 1990. Unlike Swissair, Air France was not regarded as having superior in-flight service, although business travellers were offered innovative amenities such as free ground transport after arrival in Paris. With its purchases of UTA and Air Inter, Air France controlled more than 60% of traffic at Paris's two major airports. In 1991, Air France was struggling to integrate its diverse acquisitions.

Deutsche Lufthansa Lufthansa was the German flag carrier, and carried passengers to 160 destinations on all continents. Lufthansa had hubs in both Frankfurt and Munich, and earned about 45% of its revenues on flights to European countries. It carried 11.9% of European passengers in 1990. Flights to North America and Asia each generated about 20% of revenues. Lufthansa was known for two unique strengths: first, it was a leader in the international transport of cargo due to its high technology support services and a CRS agreement with Air France and Japan Airlines to serve cargo customers worldwide. Lufthansa's second strength was in maintenance, with one-quarter of its employees involved in maintenance work. The carrier sold technical capacity and expertise on a contract basis, and was consulted by aircraft manufacturers in improving existing frame designs or building new ones. Since 1988, Lufthansa had been aggressively buying market share on many of its routes, especially travel between Eastern and Western Europe. It was an investor or partner in over thirty European businesses, including a German commuter airline, a Spanish charter carrier, and joint ventures in China and the Russia.

British Airways British Airways (BA) was the furthest-reaching international carrier in the world, and in 1989 it carried almost 25 million passengers to destinations on every populated continent. It

⁴Since SAS was also a partner, it will be discussed later in the case.

controlled 50% of traffic at its hub, London's Heathrow airport, and 15.5% of traffic in Europe in 1990. Heathrow was the busiest airport in Europe. The carrier also used airports in Singapore, Bombay, and Kuwait as secondary hubs for trips between London and the Pacific Rim. Formerly government owned, the British flag carrier was privatized in 1987. In the years leading up to privatization, BA improved its services, particularly to international business travellers. Its improved reputation turned the carrier's dismal financial situation into a profitable one. After privatization, BA was also aggressive in pursuing strategic opportunities. In addition to interline agreements with Aeroflot, Interflug, Sabena, and United, BA also had a meshed schedule arrangement with Delta through Dallas-Fort Worth airport, and cargo service to the Far East in conjunction with Singapore Airlines. It owned a 25% share in Covia, the partnership that ran the Apollo CRS. In 1987, BA acquired its main domestic competitor, British Caledonian, and in 1991 it was negotiating deals with the Belgian airline Sabena, and KLM.

KLM Royal Dutch Based in the Netherlands, KLM was similar in size to Swissair. In 1989, KLM flew passengers between Amsterdam and 140 other destinations in 77 countries. Nearly half of KLM's destinations were in Europe and it carried 4.2% of European travellers in 1990. The majority of its traffic flew between Amsterdam and either North America or the Far East. Load factors on these flights averaged between 72%-75%. KLM had a reputation for customer service, and according to Swissair's Müller, "KLM's reputation for quality service and punctuality made them a strong candidate as an ally during our search. Unfortunately, their route structure overlapped ours to too great a degree for an alliance to be fruitful." In 1991, KLM expressed interest in joining the EQA. At the same time, it was negotiating with BA on an alliance which might include Northwest. KLM had an equity investment in Northwest Airlines, but U.S. regulations prohibited foreign carriers from owning more than 25% of one of its carriers.

Interline Cooperation

The international airline business had always been a mixture of competition and cooperation: during the 1960s, 1970s, and 1980s, virtually every major international air carrier regularly entered cooperative ventures to expand route networks, circumvent political and capital obstacles to growth, and gain operating synergies. In the late 1980s, airline alliances exploded both in number and in breadth of activities (see Exhibit 6).

Two of the most common alliances were joint purchasing and maintenance agreements. A classic example was a European alliance between KLM, SAS, Swissair, and UTA called KSSU. KSSU was started in 1975 to coordinate the purchase and maintenance of airframes (handled by Swissair and SAS), engines (which KLM maintained), and landing gear (serviced by UTA). Each airline specialized in the repair of a particular portion, and was responsible for the upkeep of that portion of partners' aircraft as well. At the outset, fleets were similar enough that KSSU carriers combined purchases and maintenance. This became more complicated by 1990, as the partners' strategies diverged and resulting fleet requirements no longer matched. However, Swissair and SAS continued to coordinate their purchases in the European Quality Alliance (discussed below), as did Air France and Lufthansa.

Several airlines operated joint ventures, for example, British Airways had a 49%-51% joint venture with Aeroflot, the Soviet airline, to set up an independent airline serving routes between the Soviet Union and Western Europe, and between the Soviet Union and North America. Late in 1990, BA was also negotiating a minority investment in Interflug, the former state airline of East Germany. Another common JV was buying dedicated seats on a competitor airline; Swissair, for instance, flew from Zurich to Tokyo, but JAL "owned" a particular block of seats. JAL would pay the prorated costs of operating those seats, while selling them to its customer base.

Marketing alliances proliferated in the 1980s, particularly joint frequent flyer programs, where airlines agreed to share the costs and benefits of giving passengers credit towards upgrades

and free flights. "Code sharing" was another form of cooperation that became popular in the late 1980s. When airlines shared their reservation codes, passengers could easily connect between them without the hassles of multiple fares and check-ins. One of the innovations in code sharing was a 1987 agreement between United and BA: they assigned a single code for feeder flights, rearranged terminal locations to create complementary transfer points, and used CRS technology to allow seamless passenger handling on transfer flights.⁵ Air France and Lufthansa signed a similar agreement in September 1989 to weave together their European route schedules, and to create new long haul routes. In addition to code sharing, Air France and Lufthansa agreed to start a catering joint venture, engage in joint fleet purchases, and create permanent links between management including joint Board meetings every six months. There was no exchange of equity, but the two carriers publicly mentioned this as a future possibility.

Swissair's 1992 Fears

As Swissair's management readied themselves for the changing economics of the international airline business, they also faced the prospect of a radically new political environment in Europe. When the EC passed the Single European Act in 1985, it set in motion plans to integrate the area into a single, unified trading zone, with less regulated prices and greater political clout. The prospect of political dislocation was alarming to Müller, "EC carriers will have opportunities and flexibility that we won't have as a nonmember [of the EC]. They will have a home market of 350 million, compared to our seven million. Negotiations on tariffs, market access, and capacity will be lopsided and we'll be over a barrel." If flights by non-EC carriers between London and Munich could be considered "EC cabotage," Swissair would be significantly disadvantaged.

To address the prospect of a new competitive environment, the company undertook a wholesale restructuring of its organization in 1988. Swissair eliminated three of nine layers of management, divided its route network into three separate geographic teams, then gave sixteen route managers operational and bottom-line responsibilities.

In an attempt to strengthen Swissair's position in the global market, the internal task force assembled under Müller considered a variety of alternatives ranging from business-as-usual to merging. In July 1988, the task force recommended pursuing alliances with a European carrier, an American carrier, and an Asian carrier. The Board accepted the recommendation with one caveat: in order to maintain its strength in the premium-priced segment of the market, no ally could dilute Swissair's reputation for quality and customer service.

Swissair's Alliances

After the task force recommendation in 1988, management turned to Paul Müller's External Relations group to negotiate and implement alliances. Potential partners were examined relative to a checklist of 85 strengths and weaknesses, including technical capabilities—both maintenance and CRS/yield management, marketing opportunities, commercial strengths, financial capabilities, the complementary nature of fleet and route structures, and reputation for quality in terms of punctuality, ground service, and air service.

By the end of 1988, External Relations had completed the first steps of the task force's recommendation. In March 1989, Swissair and Delta signed an agreement for transatlantic

⁵The BA-United alliance was placed in jeopardy in late 1990 when United bought Pan Am's London routes.

cooperation. In October 1989, Swissair and SAS signed a cooperation agreement which led to the formation of the European Quality Alliance with Austrian Airlines and Finnair. In December, Swissair signed the third agreement, an intercontinental alliance with Singapore Airlines.

The Global Alliance

Delta Airlines In 1991, Delta was the third largest carrier in the United States, with roughly 13% market share and revenues over \$10 billion. The airline flew to 174 destinations, of which 148 were domestic. Delta was one of the pioneers of the domestic U.S. hub-and-spoke routing system, and it had hubs in Atlanta, Boston, Cincinnati, Dallas/Fort Worth, Los Angeles, Orlando, and Salt Lake City. In 1987, Delta acquired Western Airlines, a regional U.S. carrier. After the acquisition, Delta management saw international travel as the major growth opportunity in the 1990s. "We believed that we had filled out our domestic route structure," explained W. Whitley Hawkins, Delta's executive vice president of marketing, "but we had no existing base of international traffic. We knew that growth in the 1990s was going to come in transatlantic and transpacific markets, so we needed to start building an international route structure. International marketing agreements seemed like a perfect way to grow, and we had undertaken similar arrangements with a variety of offshore carriers in the past, including Lufthansa. When we were approached by Swissair in 1988, the concept made a lot of sense to us. We see a large advantage in being able to market a Zurich vacation to a passenger in Mobile, Alabama. Yet an alliance, rather than a merger, keeps each of us from having to sacrifice our corporate culture and style. We each liked that."

Delta flew to destinations in England, France, Ireland, the Netherlands, and Germany by 1990, and management planned to service the Asia market as well. Analysts generally believed that Delta's priorities were first in the United States, followed by developing routes in the Pacific, and then Europe. On some routes, Delta and Swissair remained competitors. Delta's expansion plans originally emphasized routes between "nontraditional" gateway airports in the United States, Europe, and Asia, such as a Cincinnati-Shannon, Ireland route. However, in 1991, Delta purchased many of Pan Am's U.S.-European routes, which included Pan Am's hub in Frankfurt and the rights to service many smaller European cities.

U.S. airline stocks had been hot takeover candidates in 1988 and 1989. To resist a takeover, Delta sought the assistance of "white squires," financial partners who would invest in the carrier without demanding a role in running it. At the same time Delta and Swissair announced a code sharing and marketing partnership, they also announced that each would purchase 5% of the other carrier's common stock. Delta management denied, however, that its alliance moves were motivated by fears of a takeover. "The driving force behind the alliance was the opportunity to substantially extend our market of destinations," Hawkins maintained. "The stock swap certainly made sense in that environment, but it was not the driving force."

Prior to the purchase of Pan Am routes, neither carrier had strong access to the base market of the other, and the two planned to develop code-shared routes for transatlantic passengers through Atlanta, Boston, and Los Angeles, the three hub/gateways that they shared. Along with code meshing, the two carriers planned to link their CRSs to enlarge scheduling capabilities and to provide through check-in and baggage handling. Although both had participated in pro-rate arrangements in the past, managers like Peter Luethi, Swissair's route manager-North America, expected this to be different: "The routing portions of the alliance are based on mutual incentives. When we pro-rated with United in Chicago, they basically told us their flight schedule. We were welcome to mesh our schedule or not, as we pleased. In the Delta arrangement, we have rearranged the schedules of *both* carriers to create the most connections possible. In Atlanta, our first meshed gateway, we now have 35 Delta connections for our passengers within an hour of arrival."

The two carriers also had similar fleet types, although Delta's was far larger. Many of the planes that each carrier had purchased were made by McDonnell Douglas, and they planned to

coordinate technical operations where possible, examining areas of overlap in their repair and maintenance functions. There were discussions, for example, of doing routine overhaul work on Delta's narrow-body fleet at Swissair's facility in Shannon, Ireland. The two also expressed hope that they could standardize the cockpit configurations of future aircraft purchases, facilitating both technical maintenance and the transfer of flight crews.

Singapore International Airlines (SIA) Like Swissair, SIA was constantly chosen by travel and business magazines as one of the premier airlines in the world. Its cabin staffs were lauded as being among the best-trained, most attentive and accommodating in the world. Its aircraft were among the youngest and best maintained, and were filled with innovative customer comforts. Finally, its financial management was superior to most. It combined the advantage of having a relatively low personnel cost structure with scheduling efficiency (its load factor was 78.9%). SIA was one of the fastest growing carriers in the Far East and a founder of the Asian CRS called Abacus, which was based in Singapore. SIA had a variety of collaborative arrangements; for instance, it operated joint cargo services with BA, KLM, and Lufthansa, among others.

In the Swissair-SIA alliance, equity holdings were cross-purchased. While management did not believe that such investments precluded SIA from working with other airlines, it decided to swap up to 5% equity in Swissair. As with Delta, the carriers aimed to create a marketing alliance of high-quality service, code-sharing routes between Europe and Asia, and close collaboration in operational areas. SIA's primary motivation in the alliances, according to T.A. Hwang, SIA's senior vice president for the Americas, was "to find a way to compete with mega-carriers while retaining our unique identity. We looked for partners with complementary route structures and like-minded management emphasis." T.A. Hwang elaborated:

Our objective is to compete with the big boys by offering "seamless" service from Singapore to virtually all areas of the world. Our second priority is to develop "operating efficiencies." Moreover, in the future we will develop joint products, work towards sharing ticket offices, airport handling and ultimately with similar cockpit designs, allow Swissair to utilize our aircraft during long stopover in Zurich or allow us to utilize their aircraft from Singapore.

A trilateral venture Although the relationships between the three carriers had started as separate ventures, all three saw the value of melding the bilateral partnerships into a trilateral "Global Alliance." By the end of 1990, the three had signed a 10-year agreement, which did not preclude competition or other alliance partners. An executive committee, including the three CEOs, was also established.

Among Swissair's first priorities was aligning the reservation systems, as Peter Luethi explained, "If the passenger could not see a benefit to the alliance, there would be no competitive advantage. If you want to be global and offer choices, you must be able to reach your partner's reservation system." Other areas of coordination included personnel exchanges. Swissair, lacking flight attendants for new routes, "borrowed" 74 flight attendants from Delta for a three-month period. Both carriers found the information exchange and marketing opportunities available through personnel swaps valuable, as was the flexibility of additional swing capacity. They planned exchanges for middle managers and headquarters personnel, as well as continued swaps of in-flight crews. By 1992, Swissair would offer through-check-in for Delta and Singapore, and ticket offices of all three partners could service the passengers from each airline.

The airlines expected to increase operating efficiencies in the future (see Exhibit 8), but Delta was cautious and wanted to go slowly, especially when it came to rationalizing fixed assets. According to Hawkins, "Expenditures to alter terminals and frequent flier lounges, and to develop joint CRSs for the alliance, are sunk costs, and we want to make sure that we're totally aligned on an idea before we spend vast sums for it." Hawkins went on to say, "We don't want to make mistakes. We recognize that giving Swissair or Singapore complete access to our database would enhance

customer service, but we need to tread lightly and be cautious before we allow any airline access to our 8.5 million frequent flier travel records." Until November 1990, Delta had nobody in charge of alliance planning. Swissair had managers overseeing the relationships with both Delta and Singapore for over a year, and Swissair was anxious to rationalize operations. "We see opportunities for tremendous economies of scale," explained Luethi, "with relatively little cost. Take the coordination of baggage handling and aircraft servicing. We want to make sure that the carrier doing ground handling for the partner can handle it with their own equipment. Coordinating this should cost about a million or two million dollars in software adjustments. However, it only needs to be done once. We fly into 108 destinations worldwide, and after the first adjustments are made, Delta can fly into any of these virtually overnight. Also, we can get much better use out of service counters and passenger lounges that are used for thirty or forty flights per day than we can out of assets that service one or two flights a day."

While Singapore agreed in principle with most of these ideas, Delta was unwilling to move quickly. One Swissair executive wondered aloud, "How do you get share of mind of the local employees from a huge company like Delta, where international expansion is driven by domestic concerns?"

The European Quality Alliance

SAS was owned by a consortium of the national airlines and governments of Denmark, Norway, and Sweden, with a "home" population of about 17 million people. Because Denmark was an EC member nation, SAS was under the auspices of the EC. When SAS was on the verge of financial collapse in the late 1970s, a new charismatic CEO, Jan Carlzon, introduced a corporate culture dedicated to the customer. Carlzon targeted the business traveller, developing innovations like separate check-ins, lounges with business amenities, and the first business class. By 1990, SAS had returned to operating profitability and its load factor had grown from 59.4% to 61.5% (intercontinental load factors averaged 71%). In 1990, SAS flew to 82 destinations in 36 countries, down from 102 destinations in 1979. In Europe, SAS handled 8.8% of traffic. SAS's route structure concentrated on Scandinavia, Eastern and Western Europe, and North America, making it complementary to Swissair's in many areas, especially Asia, India, Africa, and the Middle East. SAS also had an aggressive alliance strategy. Jan Carlzon believed that there would be only five European airlines by the end of the 1990s, and "we want to be one of the five [surviving] European airlines. . . . [To do this] we must reach critical mass. . . . B.A., Lufthansa, and Air France [will survive] and there will be a union among the others to form the fourth and fifth carriers." Carlzon went on to say, "We have to transform ourselves into a U.S. carrier [to reach critical mass]."⁶ This philosophy led SAS to take a large ownership position in Continental Airlines as well as form an alliance with Thai International.

Swissair and SAS had been bitter competitors for several decades, and had been partners in purchasing and maintenance ventures since 1958. In September 1989, executives at the two airlines decided to invest in one another and coordinate many activities. Not long after, they were joined by Austrian Airlines and Finnair, to form the European Quality Alliance. The four members accounted for more than 40% of connections available between Eastern and Western Europe on Western carriers. Their route structures linked the four European countries and points in North America, South America, Western Europe, Africa, the Middle East, Eastern Europe and Asia. As with Delta and Singapore, Swissair expected to coordinate code-sharing and connected flight arrangements with its EQA partners.

⁶Jan Carlzon at the Harvard Business School, 1988. By 1990, European airlines were beginning to believe that only four airlines would survive the 1990s.

Years of coordination on technical matters led to activities such as twenty SAS flight crews temporarily piloting Swissair flights in Swissair planes—Swissair cockpit specifications were the same as SAS aircraft. In 1990, work progressed on a project to combine the carriers' CRSs. Technical managers estimated that having Swissair and SAS on the same CRS would save the two carriers between \$60 million and \$120 million per year. Swissair and SAS also planned to consolidate customer service and ground support personnel. While Austrian Airlines and Swissair also moved closer in 1991, Finnair decided to withdraw from the alliance due to a growing nationalism and a desire to assert its Finnair identity, growing competition with SAS, and the opportunity to ally with Lufthansa as a feeder to the continent.

Swissair's Dilemma

Swissair was clearly on the move. Its network of alliances had created a formidable combination of global competitors. Achievements included the completion of over 100 projects, such as the establishment of an optimized flight pattern between Scandinavia and Switzerland which achieved a joint traffic increase in the Scandinavian market of 30% in the first six months of the alliance. From 1989 through 1991, Swissair realized a cumulative cost savings of roughly \$28 million. Many of the cost savings were on a recurring basis, which would lead to improving economies over time. In addition, Swissair generated incremental revenues in passenger traffic and overhaul work. Swissair planned to service Delta's PanAm A310 fleet, which would increase Swissair's engineering and maintenance turnover by an estimated \$7-\$25 million a year, depending on the number of aircraft serviced. The partners also planned to share airline terminals, which could produce even greater savings (see Exhibit 9).

Despite these estimated cost savings, Loepfe believed it was time for reevaluation. He was not convinced that Jan Carlzon's predictions about the future of the European airline industry was correct. "An alternative vision for Europe," he noted, "is that it will have four or five 'systems' in the late 1990s, not four or five 'airlines.' Our challenge is to build our system into one of the strongest in Europe, leveraging our international destinations and our Swiss identity." Loepfe asked, "Are we on the right trajectory, and can we build the best alliance structure in the world?"

Exhibit 1 Airline Financial and Operating Statistics (1989) (all items in millions of US\$ unless otherwise specified)

	Swissair	Delta	SIA	SAS	American	United	BA	Lufthansa	JAL
Passenger revenues	\$1,920.2	\$8,042.0	\$1,928.1	\$1,484.8	\$9,107.3	\$8,536.0	\$6,401.7	\$6,234.7	\$5,710.1
Total revenues	3,004.3	8,582.0	2,503.0	2,125.8	10,479.6	9,794.0	7,194.3	6,948.2	8,269.5
Salaries and related costs	1,043.5	3,426.0	432.0	944.6	3,446.2	3,158.0	1,749.2	2,221.2	NA
Aircraft fuel	258.4	1,233.0	324.6	170.1	1,392.0	1,352.0	NA	NA	NA
Depreciation and amortization	228.6	459.0	232.2	141.8	612.7	517.0	NA	568.8	794.9
Total operating expenses	2,945.3	8,163.0	1,905.7	2,059.3	9,735.6	9,329.0	6,626.5	6,797.1	7,616.8
Pretax income	NA	468.0	760.0	90.3	718.4	539.0	452.9	157.1	394.4
Net income	58.8	303.0	635.2	NA	454.8	324.0	295.8	72.9	147.5
Capital expenditures	544.8	1,425.0	559.4	806.9	2,394.8	1,568.0	1,052.9	NA	793.6
Current assets	1,736.0	1,018.0	1,844.9	1,369.9	2,091.2	2,738.0	1,428.1	1,827.1	3,360.1
Fixed assets (net)	1,933.5	5,399.0	2,512.6	1,581.1	7,819.6	3,898.0	4,049.2	4,810.6	4,459.4
Total assets	3,669.6	7,227.0	4,357.6	2,951.1	10,877.4	7,207.0	5,815.3	6,649.4	9,220.1
Current liabilities	893.8	1,833.0	1,173.9	902.5	3,479.1	3,224.0	2,942.3	NA	2,886.0
Long-term debt	1,182.6	1,181.0	273.9	937.2	808.9	946.0	1,497.3	NA	3,688.2
Shareholders' equity	891.9	2,596.0	2,909.7	1,026.8	3,765.8	1,564.0	1,210.0	1,930.0	2,037.0
Passengers (million)	8.6	67.2	6.8	14	NA	54.9	22.6	20.4	19.7
Available-seat-KMs (million)	24,057.8	154,340.8	39,236.4	23,320.0	184,355.2	167,275.2	82,984.0	54,731.9	94,507.7
Rev-passenger-KMs (million)	15,804.0	94,379.2	30,737.0	15,229.0	117,604.8	111,422.4	57,795.0	36,203.9	69,085.1
Passenger yield (cents)	12.2	8.5	6.3	9.7	7.7	7.7	11.1	17.2	8.3
Passenger load factor	65.7%	61.1%	78.3%	65.3%	63.8%	66.6%	69.6%	66.1%	73.1%
Available-ton-KMs (million)	3,751.6	19,999.5	6,280.0	3,060.4	24,531.2	NA	11,404.0	11,169.9	11,731.2
Revenue-ton-KMs (million)	2,474.6	10,710.1	4,643.5	1,876.5	13,182.4	NA	7,636.0	7,550.3	8,197.0
Total yield (cents)	121.4	80.1	53.9	113.3	79.5	NA	94.2	92.0	100.9
Total load factor	66.0%	53.6%	73.9%	61.3%	53.7%	NA	67.0%	67.6%	69.9%
Break-even load factor	64.7%	50.9%	56.3%	59.4%	49.9%	NA	61.7%	66.1%	64.4%
Percent of Passenger Revenues									
Salaries and related costs	54.3%	42.6%	22.4%	63.6%	37.8%	37.0%	27.3%	35.6%	NA
Aircraft fuel	13.5	15.3	16.8	11.5	15.3	15.8	NA	NA	NA
Depreciation and amortization	11.9	5.7	12.0	9.6	6.7	6.1	NA	9.1	13.9
Total operating expenses	153.4	101.5	98.8	138.7	106.9	109.3	103.5	109.0	133.4
Pretax income	NA	5.8	39.4	6.1	7.9	6.3	7.1	2.5	6.9
Net income	3.1	3.8	32.9	NA	5.0	3.8	4.6	1.2	2.6
Percent of Total Revenues									
Salaries and related costs	34.7	39.9	17.3	44.4	32.9	32.2	24.3	32.0	NA
Aircraft fuel	8.6	14.4	13.0	8.0	13.3	13.8	NA	NA	NA
Depreciation and amortization	7.6	5.3	9.3	6.7	5.8	5.3	NA	8.2	9.6
Total operating expenses	98.0	95.1	76.1	96.9	92.9	95.3	92.1	97.8	92.1
Pretax income	NA	5.5	30.4	4.2	6.9	5.5	6.3	2.3	4.8
Net income	2.0	3.5	25.4	NA	4.3	3.3	4.1	1.0	1.8
Personnel cost per employee (\$000)	64	54	33	NA	NA	NA	42	53	NA
Total operating expenses per ATK (cents)	78.5	40.8	30.3	67.3	39.7	NA	58.1	60.9	64.9

Sources: 1989 Annual Reports and Swissair documents

Exhibit 2 Airline Financial and Operating Statistics (1991) (all items in millions of US\$ unless otherwise specified)

	Swissair	Delta	SIA	SAS	American	United	BA	Lufthansa	JAL
Passenger revenues									
Total revenues	\$2,282.9	\$10,115.2	\$3,925.0	\$2,790.6	\$10,714.0	\$10,295.8	\$7,448.9	\$8,596.6	\$6,816.7
Salaries and related costs	3,688.9	10,836.8	5,421.0	3,692.6	12,098.0	11,660.1	9,089.8	9,702.1	10,462.2
Aircraft fuel	1,337.9	4,436.4	704.0	1,046.1	4,027.0	4,056.7	2,620.4	3,142.1	NA
Depreciation and amortization	312.2	1,482.4	704.0	251.9	1,780.0	1,674.1	906.5	947.6	NA
Total operating expenses	254.8	634.5	614.0	123.6	823.0	603.8	513.3	912.0	872.3
Pretax income	3,401.0	11,511.7	4,445.5	3,415.5	12,080.0	12,150.7	8,491.0	10,654.5	10,520.0
Net income	287.9	(786.4)	975.5	(136.9)	18.0	(512.9)	495.9	(181.3)	(57.8)
Capital expenditures	33.0	(506.3)	928.4	NA	(165.0)	(335.3)	443.7	(256.6)	(100.8)
Current assets	36.4	1,413.1	1,660.0	671.2	3,311.0	2,121.9	937.9	1,833.1	1,985.3
Fixed assets (net)	1,887.5	1,698.4	3,278.2	733.4	2,833.0	2,927.5	2,935.4	2,425.4	5,191.8
Total assets	2,383.7	7,093.3	6,174.9	3,521.5	8,943.0	5,991.1	6,041.3	7,098.9	6,506.1
Current liabilities	4,271.2	10,161.6	9,975.0	5,692.2	15,180.0	9,906.5	9,138.5	9,613.9	14,800.2
Long-term debt	1,035.4	3,542.8	2,051.1	1,333.4	5,257.0	4,103.3	2,968.4	NA	3,846.2
Shareholders' equity	1,370.2	2,723.1	421.2	2,961.5	2,577.0	1,825.9	3,285.1	NA	7,012.6
	1,082.7	1,894.1	7,045.9	1,397.4	3,872.0	1,613.5	2,234.2	1,619.0	3,006.6
Passengers (million)	8.0	77.0	8.1	13.9	76.0	63.0	25.4	29.5	23.3
Available-seat-KMs (million)	NA	196,961.6	47,454.3	24,317.0	213,553.9	198,558.8	93,877.0	81,661.8	75,505.5
Rev-passenger-KMs (million)	15,159.8	116,307.7	34,893.5	15,416.0	131,735.2	131,663.2	65,896.0	52,344.2	54,666.0
Passenger yield (cents)	NA	8.7	11.2	18.1	8.1	7.8	11.3	16.4	12.5
Passenger load factor	61.6%	59.1%	73.5%	63.4%	61.7%	66.3%	70.2%	64.1%	72.4%
Available-ton-KMs (million)	3,909.9	26,600.6	7,624.4	3,074.4	28,670.2	NA	13,818.0	14,292.2	NA
Revenue-ton-KMs (million)	2,459.5	13,377.6	5,331.2	1,847.2	15,007.9	NA	9,111.0	9,376.2	8,335.1
Total yield (cents)	150.0	81.0	101.7	199.9	80.6	NA	98.9	103.5	125.5
Total load factor	63.0%	NA	69.9%	60.2%	NA	NA	65.6%	66.0%	65.3%
Break-even load factor	64.9%	63.0%	60.5%	NA	61.6%	69.5%	61.2%	NA	67.5%
Percent of Passenger Revenues									
Salaries and related costs	58.6%	43.9%	26.4%	37.5%	37.6%	39.4%	35.2%	36.6%	NA
Aircraft fuel	13.7	14.7	17.9	9.0	16.6	16.3	12.2	11.0	NA
Depreciation and amortization	11.2	6.3	15.6	4.4	7.7	5.9	6.9	10.6	12.8
Total operating expenses	149.0	113.8	113.3	122.4	112.7	118.0	114.0	129.9	154.3
Pretax income	12.6	(7.8)	24.9	(4.9)	0.2	(5.0)	6.7	(2.1)	(0.8)
Net income	1.4	(5.0)	23.7	NA	(1.5)	(3.3)	6.0	(3.0)	(1.5)
Percent of Total Revenues									
Salaries and related costs	36.3	40.9	19.1	28.3	33.3	34.8	28.8	32.4	NA
Aircraft fuel	8.5	13.7	13.0	6.8	14.7	14.4	10.0	9.8	NA
Depreciation and amortization	6.9	5.9	11.3	3.3	6.8	5.2	5.6	9.4	8.3
Total operating expenses	92.2	106.2	82.2	92.5	99.9	104.2	93.4	109.8	100.6
Pretax income	7.8	(7.3)	18.0	(3.7)	0.1	(4.4)	5.5	(1.9)	(0.6)
Net income	0.9	(4.7)	17.1	NA	(1.4)	(2.9)	4.9	(2.6)	(1.0)
Personnel cost per employee (\$000)	69.3	65.5	47.3	33.0	41.2	50.0	52.0	50.8	NA
Total operating expenses per ATK (cents)	87.0	43.3	58.3	111.1	43.1	NA	61.5	74.6	NA

Sources: 1991 Annual Reports

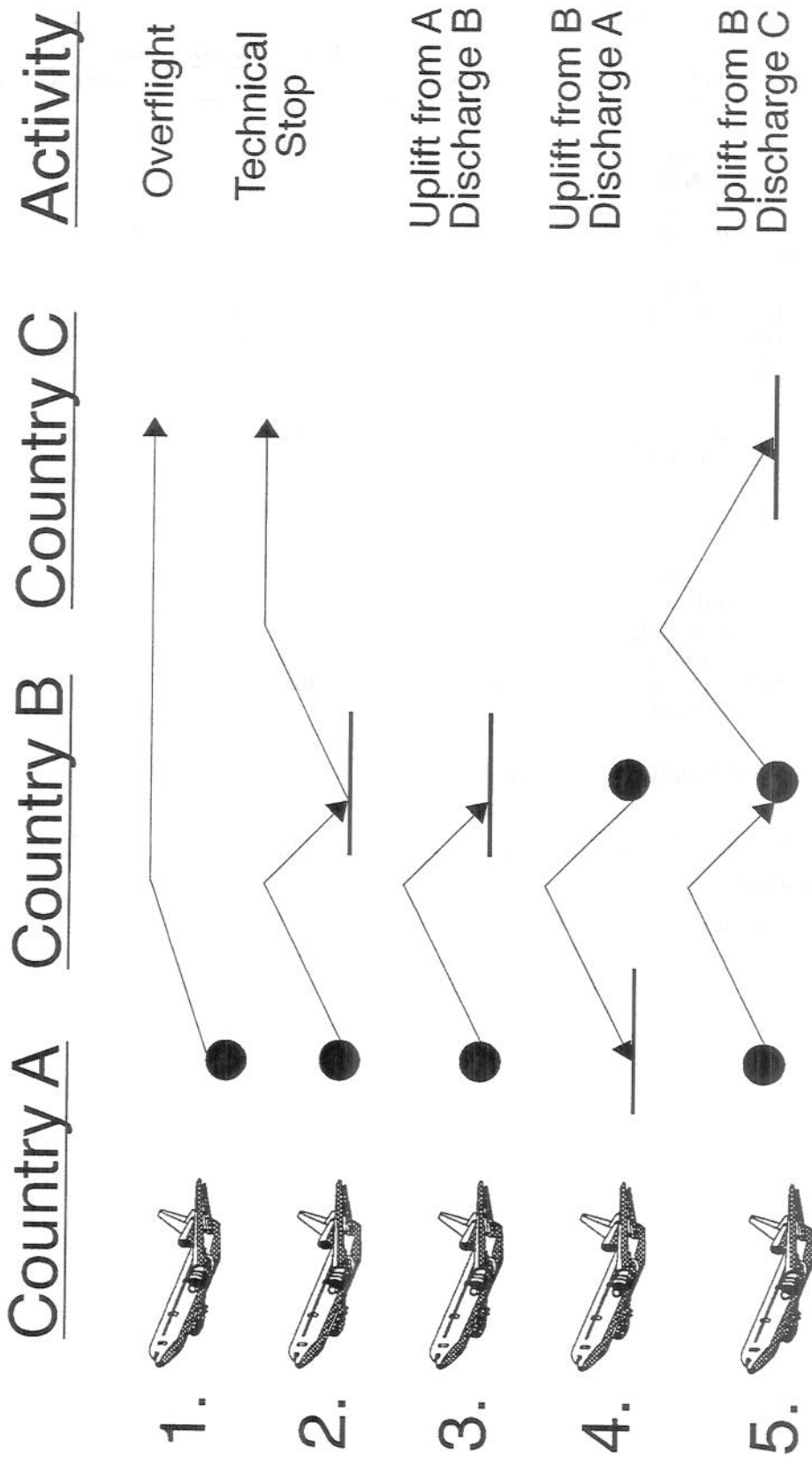
Exhibit 3 Comparison of Fleet Structures of Global Alliance Partners

Manufacturer	Segment Type	Number of Aircraft Used (Ordered)		
		Swissair	Delta Air	Singapore Air
Boeing				
747-400	LONG RANGE	0	0	12 (27)
747-300	LONG RANGE	2	0	11
747-300 combined	LONG RANGE	3	0	3
747-200	LONG RANGE	0	0	6 (1)
767	MEDIUM RANGE	0	39 (6)	0
767-ER	LONG RANGE	0	10 (7)	0
757	SHORT RANGE	0	78 (12)	0
737	SHORT RANGE	0	72 (57)	0
727	SHORT RANGE	0	153	0
Airbus Industrie				
A310-300	MEDIUM RANGE	5	14 (9)	10 (5)
A310-200	MEDIUM RANGE	5	7	6
A340	LONG RANGE	0	0	0 (7)
A319-320/321	SHORT RANGE	0 (29)		
McDonnell Douglas				
MD-11	LONG RANGE	12 (1)	6 (11)	0
DC-10 ER	LONG RANGE	0	0	0
DC-10	MEDIUM RANGE	0	0	0
DC-9	SHORT RANGE	0	18	0
MD-80	SHORT RANGE	24	105 (20)	0
MD-90	SHORT RANGE	0	0 (50)	
Fokker				
100	SHORT RANGE	10	0	0
Lockheed				
L-1011	MEDIUM RANGE	0	56	0

Source: Company Annual Reports

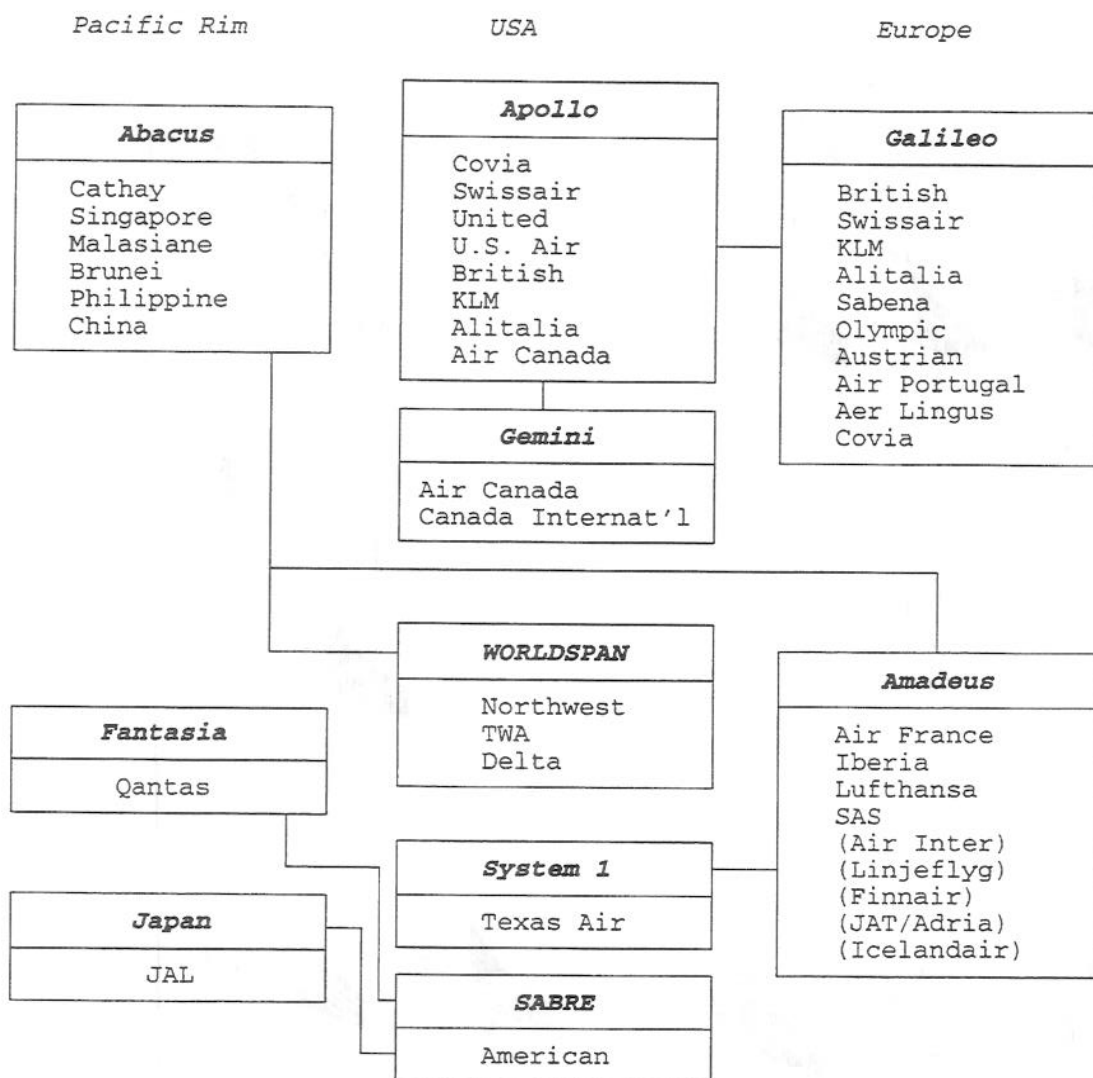
Note: Amounts include aircraft owned and leased in 1991

Exhibit 4 Five Freedoms of the Air



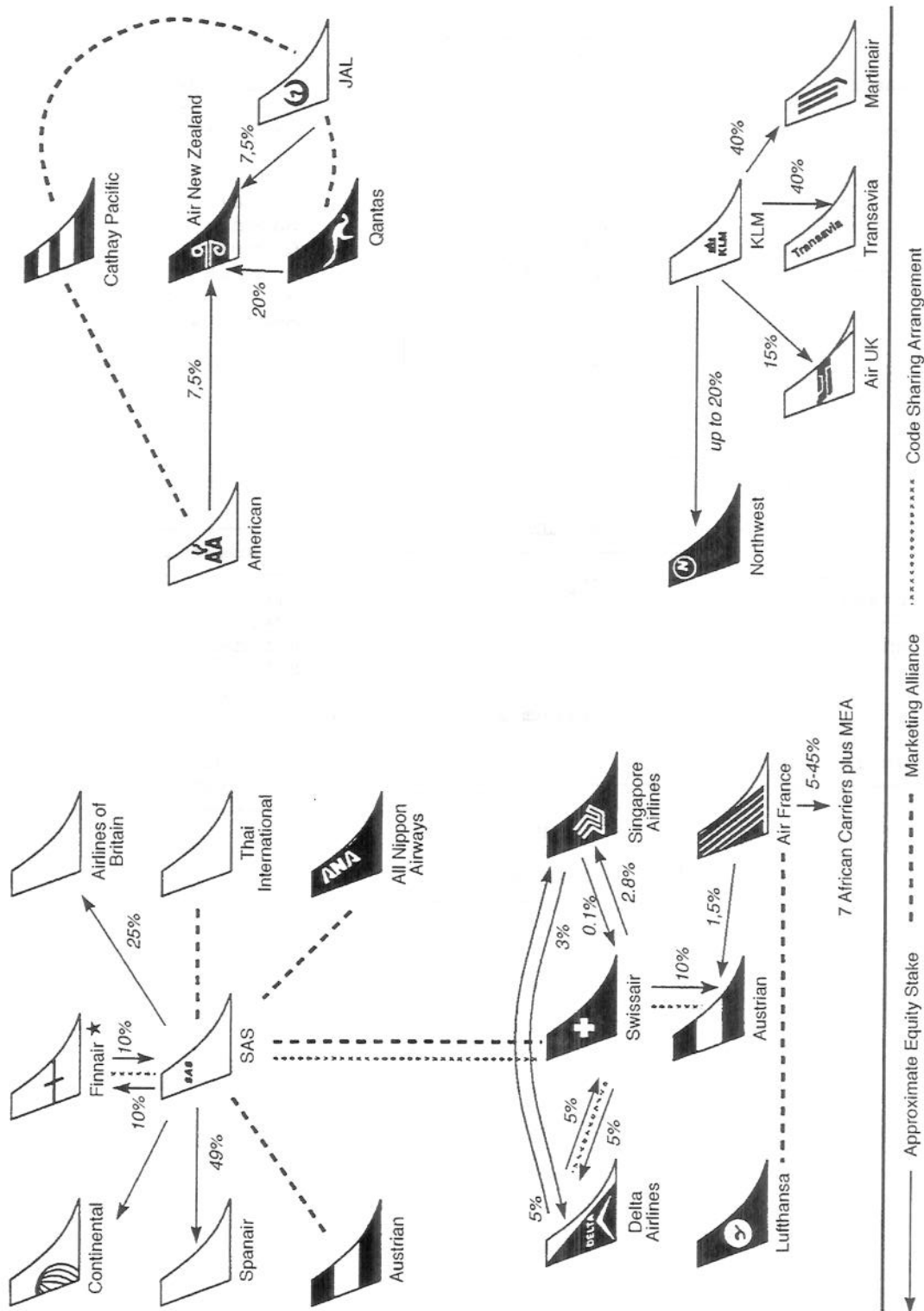
Source: RB McKern, \16.6italics\Evolving Strategies in the International Airline Industry, Stanford GSB.

Exhibit 5 Major CRS Networks Worldwide



Source: Swissair documents

Exhibit 6 Interline Agreements



Source: Casewriter estimates

*SAS and Finnair eliminated this arrangement when Finnair pulled out of the EQA.

Exhibit 8 Alliance Activities

Activity	Airline
Worldwide through check-in	DL/SQ/SR ^a
Attractive round the world tariff	DL/SQ/SR
Tour package cooperation and development	DL/SQ/SR
Flight attendant exchanges	DL/SQ/SR
Joint logo and advertising—in-house magazines	DL/SQ/SR
Travel agency promotions/in-house awareness	DL/SQ/SR
Seat allotment agreement on Singapore Airlines	SQ/SR
Swissair move into SQ's terminal in Singapore	SQ/SR
Optimize connecting flights in Atlanta & Singapore	DL/SQ/SR
Shared ticket office in Toronto	DL/SR
Lounge exchange program	DL/SQ/SR
Shared ticket office in Kuala Lumpur	SQ/SR
Cargo handling/catering in Johannesburg	SQ/SR
Equity swaps ^b	DL/SQ/SR

Source: Swissair

^aDelta/Singapore/Swissair^bSwissair/Delta 5.0%; Swissair/Singapore 0.6%; Singapore/Swissair 2.3%Exhibit 9 Hypothetical Cost/Benefit Analysis of Sharing the Delta Terminal at JFK Airport^a

	Cost When Performed by Swissair	Cost When Performed by Delta for Swissair
Staff cost	\$5	\$1
Rental cost	2	1
EDP cost	1	1
Ramp handling	4	-
Other terminal cost	1	-
Fee paid to Delta	-	7
Total cost to Swissair	\$ 13	\$ 10

Source: Swissair

^aTheoretical dollar amounts, in millions

Collaborate with Your Competitors—and Win

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Collaborate with Your Competitors—and Win

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Collaboration between competitors is in fashion. General Motors and Toyota assemble automobiles, Siemens and Philips develop semiconductors, Canon supplies photocopiers to Kodak, France's Thomson and Japan's JVC manufacture videocassette recorders. But the spread of what we call "competitive collaboration"—joint ventures, outsourcing agreements, product licensings, cooperative research—has triggered unease about the long-term consequences. A strategic alliance can strengthen both companies against outsiders even as it weakens one partner vis-à-vis the other. In particular, alliances between Asian companies and Western rivals seem to work against the Western partner. Cooperation becomes a low-cost route for new competitors to gain technology and market access.¹

Yet the case for collaboration is stronger than ever.

Gary Hamel is lecturer in business policy and management at the London Business School. Yves L. Doz is professor of business strategy at INSEAD, Fontainebleau, France. C.K. Prahalad is professor of corporate strategy and international business at the University of Michigan. The authors often collaborate in research and writing on international business. Professors Prahalad and Doz are the authors of The Multinational Mission (Free Press, 1987).

1. For a vigorous warning about the perils of collaboration, see Robert B. Reich and Eric D. Mankin, "Joint Ventures with Japan Give Away Our Future," HBR March-April 1986, p. 78.

It takes so much money to develop new products and to penetrate new markets that few companies can go it alone in every situation. ICL, the British computer company, could not have developed its current generation of mainframes without Fujitsu. Motorola needs Toshiba's distribution capacity to break into the Japanese semiconductor market. Time is another critical factor. Alliances can provide shortcuts for Western companies racing to improve their production efficiency and quality control.

We have spent more than five years studying the inner workings of 15 strategic alliances and monitoring scores of others. Our research (see the insert "About Our Research") involves cooperative ventures between competitors from the United States and Japan, Europe and Japan, and the United States and Europe. We did not judge the success or failure of each partnership by its longevity—a common mistake when evaluating strategic alliances—but by the shifts in competitive strength on each side. We focused on how companies use competitive collaboration to enhance their internal skills and technologies while they guard against transferring competitive advantages to ambitious partners.

There is no immutable law that strategic alliances must be a windfall for Japanese or Korean partners. Many Western companies do give away more than they gain—but that's because they enter partnerships without knowing what it takes to win. Companies

About Our Research

We spent more than five years studying the internal workings of 15 strategic alliances around the world. We sought answers to a series of interrelated questions. What role have strategic alliances and outsourcing agreements played in the global success of Japanese and Korean companies? How do alliances change the competitive balance between partners? Does winning at collaboration mean different things to different companies? What factors determine who gains most from collaboration?

To understand who won and who lost and why, we observed the interactions of the partners firsthand and

at multiple levels in each organization. Our sample included four European-U.S. alliances, two intra-European alliances, two European-Japanese alliances, and seven U.S.-Japanese alliances. We gained access to both sides of the partnerships in about half the cases and studied each alliance for an average of three years.

Confidentiality was a paramount concern. Where we did have access to both sides, we often wound up knowing more about who was doing what to whom than either of the partners. To preserve confidentiality, our article disguises many of the alliances that were part of the study.

that benefit most from competitive collaboration adhere to a set of simple but powerful principles.

Collaboration is competition in a different form.

Successful companies never forget that their new partners may be out to disarm them. They enter alliances with clear strategic objectives, and they also understand how their partners' objectives will affect their success.

Harmony is not the most important measure of success.

Indeed, occasional conflict may be the best evidence of mutually beneficial collaboration. Few alliances remain win-win undertakings forever. A partner may be content even as it unknowingly surrenders core skills.

Cooperation has limits. Companies must defend against competitive compromise.

A strategic alliance is a constantly evolving bargain whose real terms go beyond the legal agreement or the aims of top management. What information gets traded is determined day to day, often by engineers and operating managers. Successful companies inform employees at all levels about what skills and technologies are off-limits to the partner and monitor what the partner requests and receives.

Learning from partners is paramount.

Successful companies view each alliance as a window on their partners' broad capabilities. They use the alliance to build skills in areas outside the formal agreement and systematically diffuse new knowledge throughout their organizations.

Why Collaborate?

Using an alliance with a competitor to acquire new technologies or skills is not devious. It reflects the commitment and capacity of each partner to absorb the skills of the other. We found that in every case in which a Japanese company emerged from an alliance stronger than its Western partner, the Japanese company had made a greater effort to learn.

Strategic intent is an essential ingredient in the commitment to learning. The willingness of Asian companies to enter alliances represents a change in competitive tactics, not competitive goals. NEC, for example, has used a series of collaborative ventures to enhance its technology and product competences. NEC is the only company in the world with a leading position in telecommunications, computers, and semiconductors—despite its investing less in R&D (as a percentage of revenues) than competitors like Texas Instruments, Northern Telecom, and L.M. Ericsson. Its string of partnerships, most notably with Honeywell, allowed NEC to leverage its in-house R&D over the last two decades.

Western companies, on the other hand, often enter alliances to avoid investments. They are more interested in reducing the costs and risks of entering new businesses or markets than in acquiring new skills. A senior U.S. manager offered this analysis of his company's venture with a Japanese rival: "We complement each other well—our distribution capability and their manufacturing skill. I see no reason to invest upstream if we can find a secure source of product. This is a comfortable relationship for us."

An executive from this company's Japanese partner offered a different perspective: "When it is necessary to collaborate, I go to my employees and say, 'This is bad, I wish we had these skills ourselves.

Collaboration is second best. But I will feel worse if after four years we do not know how to do what our partner knows how to do.' We must digest their skills."

The problem here is not that the U.S. company wants to share investment risk (its Japanese partner does too) but that the U.S. company has no ambition *beyond* avoidance. When the commitment to learning is so one-sided, collaboration invariably leads to competitive compromise.

Many so-called alliances between Western companies and their Asian rivals are little more than sophisticated outsourcing arrangements (see the insert "Competition for Competence"). General Motors buys cars and components from Korea's Daewoo. Siemens buys computers from Fujitsu. Apple buys laser printer engines from Canon. The traffic is almost entirely one way. These OEM deals offer Asian partners a way to capture investment initiative from Western competitors and displace customer-competitors from value-creating activities. In many cases this goal meshes with that of the Western partner: to regain competitiveness quickly and with minimum effort.

Consider the joint venture between Rover, the British automaker, and Honda. Some 25 years ago, Rover's forerunners were world leaders in small car design. Honda had not even entered the automobile business. But in the mid-1970s, after failing to penetrate foreign markets, Rover turned to Honda for technology and product-development support. Rover has used the alliance to avoid investments to design and build new cars. Honda has cultivated skills in European styling and marketing as well as multinational manufacturing. There is little doubt which company will emerge stronger over the long term.

Troubled laggards like Rover often strike alliances with surging latecomers like Honda. Having fallen behind in a key skills area (in this case, manufacturing small cars), the laggard attempts to compensate for past failures. The latecomer uses the alliance to close a specific skills gap (in this case, learning to build cars for a regional market). But a laggard that forges a partnership for short-term gain may find itself in a dependency spiral: as it contributes fewer and fewer distinctive skills, it must reveal more and more of its internal operations to keep the partner interested. For the weaker company, the issue shifts from "Should we collaborate?" to "With whom should we collaborate?" to "How do we keep our partner interested as we lose the advantages that made us attractive to them in the first place?"

There's a certain paradox here. When both partners are equally intent on internalizing the other's skills, distrust and conflict may spoil the alliance and threaten its very survival. That's one reason joint ventures between Korean and Japanese companies

have been few and tempestuous. Neither side wants to "open the kimono." Alliances seem to run most smoothly when one partner is intent on learning and the other is intent on avoidance—in essence, when one partner is willing to grow dependent on the other. But running smoothly is not the point; the point is for a company to emerge from an alliance more competitive than when it entered it.

One partner does not always have to give up more than it gains to ensure the survival of an alliance. There are certain conditions under which mutual gain is possible, at least for a time:

The partners' strategic goals converge while their competitive goals diverge.

That is, each partner allows for the other's continued prosperity in the shared business. Philips and Du Pont collaborate to develop and manufacture compact discs, but neither side invades the other's market. There is a clear upstream/downstream division of effort.

The size and market power of both partners is modest compared with industry leaders.

This forces each side to accept that mutual dependence may have to continue for many years. Long-term collaboration may be so critical to both partners that neither will risk antagonizing the other by an overtly competitive bid to appropriate skills or competences. Fujitsu's 1 to 5 size disadvantage with IBM means it will be a long time, if ever, before Fujitsu can break away from its foreign partners and go it alone.

Each partner believes it can learn from the other and at the same time limit access to proprietary skills.

JVC and Thomson, both of whom make VCRs, know that they are trading skills. But the two companies are looking for very different things. Thomson needs product technology and manufacturing prowess; JVC needs to learn how to succeed in the fragmented European market. Both sides believe there is an equitable chance for gain.

How to Build Secure Defenses

For collaboration to succeed, each partner must contribute something distinctive: basic research, product development skills, manufacturing capacity, access to distribution. The challenge is to share enough skills to create advantage vis-à-vis companies outside the alliance while preventing a wholesale transfer of core skills to the partner. This is a

Competition for Competence

In the article "Do You Really Have a Global Strategy?" (HBR July-August 1985), Gary Hamel and C.K. Prahalad examined one dimension of the global competitive battle: the race for brand dominance. This is the battle for control of distribution channels and global "share of mind." Another global battle has been much less visible and has received much less management attention. This is the battle for control over key technology-based competences that fuel new business development.

Honda has built a number of businesses, including marine engines, lawn mowers, generators, motorcycles, and cars, around its engine and power train competence. Casio draws on its expertise in semiconductors and digital display in producing calculators, small-screen televisions, musical instruments, and watches. Canon relies on its imaging and microprocessor competences in its camera, copier, and laser printer businesses.

In the short run, the quality and performance of a company's products determine its competitiveness. Over the longer term, however, what counts is the ability to build and enhance core competences—distinctive skills that spawn new generations of products. This is where many managers and commentators fear Western companies are losing. Our research helps explain why some companies may be more likely than others to surrender core skills.

Alliance or Outsourcing?

Enticing Western companies into outsourcing agreements provides several benefits to ambitious OEM partners. Serving as a manufacturing base for a Western partner is a quick route to increased manufacturing share without the risk or expense of building brand share. The Western partners' distribution capability allows Asian suppliers to focus all their resources on building absolute product advantage. Then OEMs can enter markets on their own and convert manufacturing share into brand share.

Serving as a sourcing platform yields more than just volume and process improvements. It also generates low-cost, low-risk market learning. The downstream (usually Western) partner typically provides information on how to tailor products to local markets. So every product design transferred to an OEM partner is also a research report on customer preferences and market needs. The OEM partner can use these insights to read the market accurately when it enters on its own.

A Ratchet Effect

Our research suggests that once a significant sourcing relationship has been established, the buyer becomes

less willing and able to reemerge as a manufacturing competitor. Japanese and Korean companies are, with few exceptions, exemplary suppliers. If anything, the "soft option" of outsourcing becomes even softer as OEM suppliers routinely exceed delivery and quality expectations.

Outsourcing often begins a ratchetlike process. Relinquishing manufacturing control and paring back plant investment leads to sacrifices in product design, process technology, and, eventually, R&D budgets. Consequently, the OEM partner captures product-development as well as manufacturing initiative. Ambitious OEM partners are not content with the old formula of "You design it and we'll make it." The new reality is, "You design it, we'll learn from your designs, make them more manufacturable, and launch our products alongside yours."

Reversing the Verdict

This outcome is not inevitable. Western companies can retain control over their core competences by keeping a few simple principles in mind.

A competitive product is not the same thing as a competitive organization. While an Asian OEM partner may provide the former, it seldom provides the latter. In essence, outsourcing is a way of renting someone else's competitiveness rather than developing a long-term solution to competitive decline.

Rethink the make-or-buy decision. Companies often treat component manufacturing operations as cost centers and transfer their output to assembly units at an arbitrarily set price. This transfer price is an accounting fiction, and it is unlikely to yield as high a return as marketing or distribution investments, which require less research money and capital. But companies seldom consider the competitive consequences of surrendering control over a key value-creating activity.

Watch out for deepening dependence. Surrender results from a series of outsourcing decisions that individually make economic sense but collectively amount to a phased exit from the business. Different managers make outsourcing decisions at different times, unaware of the cumulative impact.

Replenish core competences. Western companies must outsource some activities; the economics are just too compelling. The real issue is whether a company is adding to its stock of technologies and competences as rapidly as it is surrendering them. The question of whether to outsource should always provoke a second question: Where can we outpace our partner and other rivals in building new sources of competitive advantage?

very thin line to walk. Companies must carefully select what skills and technologies they pass to their partners. They must develop safeguards against unintended, informal transfers of information. The goal is to limit the transparency of their operations.

The type of skill a company contributes is an important factor in how easily its partner can internalize the skills. The potential for transfer is greatest when a partner's contribution is easily transported (in engineering drawings, on computer tapes, or in the heads of a few technical experts); easily interpreted (it can be reduced to commonly understood equations or symbols); and easily absorbed (the skill or competence is independent of any particular cultural context).

Western companies face an inherent disadvantage because their skills are generally more vulnerable to transfer. The magnet that attracts so many companies to alliances with Asian competitors is their manufacturing excellence—a competence that is less transferable than most. Just-in-time inventory systems and quality circles can be imitated, but this is like pulling a few threads out of an oriental carpet. Manufacturing excellence is a complex web of employee training, integration with suppliers, statistical process controls, employee involvement, value engineering, and design for manufacture. It is difficult to extract such a subtle competence in any way but a piecemeal fashion.

There is an important distinction between technology and competence. A discrete, stand-alone technology (for example, the design of a semiconductor chip) is more easily transferred than a process competence, which is entwined in the social fabric of a company. Asian companies often learn more from their Western partners than vice versa because they contribute difficult-to-unravel strengths, while Western partners contribute easy-to-imitate technology.

So companies must take steps to limit transparency. One approach is to limit the scope of the formal agreement. It might cover a single technology rather than an entire range of technologies; part of a product line rather than the entire line; distribution in a limited number of markets or for a limited period of time. The objective is to circumscribe a partner's opportunities to learn.

Moreover, agreements should establish specific performance requirements. Motorola, for example, takes an incremental, incentive-based approach to technology transfer in its venture with Toshiba. The agreement calls for Motorola to release its microprocessor technology incrementally as Toshiba delivers on its promise to increase Motorola's penetration in the Japanese semiconductor market. The greater Motorola's market share, the greater Toshiba's access to Motorola's technology.

Many of the skills that migrate between companies are not covered in the formal terms of collaboration. Top management puts together strategic alliances and sets the legal parameters for exchange. But what actually gets traded is determined by day-to-day interactions of engineers, marketers, and product developers: who says what to whom, who gets access to what facilities, who sits on what joint committees. The most important deals ("I'll share this with you if you share that with me") may be struck four or five organizational levels below where the deal was signed. Here lurks the greatest risk of unintended transfers of important skills.

Consider one technology-sharing alliance between European and Japanese competitors. The European company valued the partnership as a way to acquire a specific technology. The Japanese company considered it a window on its partner's entire range of competences and interacted with a broad spectrum of its partner's marketing and product-development staff. The company mined each contact for as much information as possible.

For example, every time the European company requested a new feature on a product being sourced from its partner, the Japanese company asked for detailed customer and competitor analyses to justify the request. Over time, it developed a sophisticated picture of the European market that would assist its own entry strategy. The technology acquired by the European partner through the formal agreement had a useful life of three to five years. The competitive insights acquired informally by the Japanese company will probably endure longer.

Limiting unintended transfers at the operating level requires careful attention to the role of gatekeepers, the people who control what information flows to a partner. A gatekeeper can be effective only if there are a limited number of gateways through which a partner can access people and facilities. Fujitsu's many partners all go through a single office, the "collaboration section," to request information and assistance from different divisions. This way the company can monitor and control access to critical skills and technologies.

We studied one partnership between European and U.S. competitors that involved several divisions of each company. While the U.S. company could only access its partner through a single gateway, its partner had unfettered access to all participating divisions. The European company took advantage of its free rein. If one division refused to provide certain information, the European partner made the same request of another division. No single manager in the U.S. company could tell how much information had been transferred or was in a position to piece together patterns in the requests.

Collegiality is a prerequisite for collaborative suc-

cess. But *too much* collegiality should set off warning bells to senior managers. CEOs or division presidents should expect occasional complaints from their counterparts about the reluctance of lower level employees to share information. That's a sign that the gatekeepers are doing their jobs. And senior management should regularly debrief operating personnel to find out what information the partner is requesting and what requests are being granted.

Limiting unintended transfers ultimately depends on employee loyalty and self-discipline. This was a real issue for many of the Western companies we studied. In their excitement and pride over technical achievements, engineering staffs sometimes shared information that top management considered sensitive. Japanese engineers were less likely to share proprietary information.

There are a host of cultural and professional reasons for the relative openness of Western technicians. Japanese engineers and scientists are more loyal to their company than to their profession. They are less steeped in the open give-and-take of university research since they receive much of their training from employers. They consider themselves team members more than individual scientific contributors. As one Japanese manager noted, "We don't feel any need to reveal what we know. It is not an issue of pride for us. We're glad to sit and listen. If we're patient we usually learn what we want to know."

Controlling unintended transfers may require restricting access to facilities as well as to people. Companies should declare sensitive laboratories and factories off-limits to their partners. Better yet, they might house the collaborative venture in an entirely new facility. IBM is building a special site in Japan where Fujitsu can review its forthcoming mainframe software before deciding whether to license it. IBM will be able to control exactly what Fujitsu sees and what information leaves the facility.

Finally, which country serves as "home" to the alliance affects transparency. If the collaborative team is located near one partner's major facilities, the other partner will have more opportunities to learn—but less control over what information gets traded. When the partner houses, feeds, and looks after engineers and operating managers, there is a danger they will "go native." Expatriate personnel need frequent visits from headquarters as well as regular furloughs home.

Enhance the Capacity to Learn

Whether collaboration leads to competitive surrender or revitalization depends foremost on what

employees believe the purpose of the alliance to be. It is self-evident: to learn, one must *want* to learn. Western companies won't realize the full benefits of competitive collaboration until they overcome an arrogance borne of decades of leadership. In short, Western companies must be more receptive.

We asked a senior executive in a Japanese electronics company about the perception that Japanese companies learn more from their foreign partners than vice versa. "Our Western partners approach us with the attitude of teachers," he told us. "We are quite happy with this, because we have the attitude of students."

Learning begins at the top. Senior management must be committed to enhancing their companies' skills as well as to avoiding financial risk. But most learning takes place at the lower levels of an alliance. Operating employees not only represent the front lines in an effective defense but also play a vital role in acquiring knowledge. They must be well briefed on the partner's strengths and weaknesses and understand how acquiring particular skills will bolster their company's competitive position.

This is already standard practice among Asian companies. We accompanied a Japanese development engineer on a tour through a partner's factory. This engineer dutifully took notes on plant layout, the number of production stages, the rate at which the line was running, and the number of employees. He recorded all this despite the fact that he had no manufacturing responsibility in his own company, and that the alliance didn't encompass joint manufacturing. Such dedication greatly enhances learning.

Collaboration doesn't always provide an opportunity to fully internalize a partner's skills. Yet just acquiring new and more precise benchmarks of a partner's performance can be of great value. A new benchmark can provoke a thorough review of internal performance levels and may spur a round of competitive innovation. Asking questions like, "Why do their semiconductor logic designs have fewer errors than ours?" and "Why are they investing in this technology and we're not?" may provide the incentive for a vigorous catch-up program.

Competitive benchmarking is a tradition in most of the Japanese companies we studied. It requires many of the same skills associated with competitor analysis: systematically calibrating performance against external targets; learning to use rough estimates to determine where a competitor (or partner) is better, faster, or cheaper; translating those estimates into new internal targets; and recalibrating to establish the rate of improvement in a competitor's performance. The great advantage of competitive collaboration is that proximity makes benchmarking easier.

Indeed, some analysts argue that one of Toyota's motivations in collaborating with GM in the much-publicized NUMMI venture is to gauge the quality of GM's manufacturing technology. GM's top manufacturing people get a close look at Toyota, but the reverse is true as well. Toyota may be learning whether its giant U.S. competitor is capable of closing the productivity gap with Japan.

Competitive collaboration also provides a way of getting close enough to rivals to predict how they will behave when the alliance unravels or runs its course. How does the partner respond to price changes? How does it measure and reward executives? How does it prepare to launch a new product? By revealing a competitor's management orthodoxies, collaboration can increase the chances of success in future head-to-head battles.

Knowledge acquired from a competitor-partner is only valuable after it is diffused through the organization. Several companies we studied had established internal clearinghouses to collect and disseminate information. The collaborations manager at one Japanese company regularly made the rounds of all employees involved in alliances. He identified what information had been collected by whom and then passed it on to appropriate departments. Another company held regular meetings where employees shared new knowledge and determined who was best positioned to acquire additional information.

Proceed with Care—But Proceed

After World War II, Japanese and Korean companies entered alliances with Western rivals from weak po-

sitions. But they worked steadfastly toward independence. In the early 1960s, NEC's computer business was one-quarter the size of Honeywell's, its primary foreign partner. It took only two decades for NEC to grow larger than Honeywell, which eventually sold its computer operations to an alliance between NEC and Group Bull of France. The NEC experience demonstrates that dependence on a foreign partner doesn't automatically condemn a company to also-ran status. Collaboration may sometimes be unavoidable; surrender is not.

Managers are too often obsessed with the ownership structure of an alliance. Whether a company controls 51% or 49% of a joint venture may be much less important than the rate at which each partner learns from the other. Companies that are confident of their ability to learn may even prefer some ambiguity in the alliance's legal structure. Ambiguity creates more potential to acquire skills and technologies. The challenge for Western companies is not to write tighter legal agreements but to become better learners.

Running away from collaboration is no answer. Even the largest Western companies can no longer outspend their global rivals. With leadership in many industries shifting toward the East, companies in the United States and Europe must become good borrowers—much like Asian companies did in the 1960s and 1970s. Competitive renewal depends on building new process capabilities and winning new product and technology battles. Collaboration can be a low-cost strategy for doing both.

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Otis Elevator Company (A): China Joint Venture

In late 1983, senior management of the Otis Elevator Company was assessing the terms of a potential joint venture proposed by the China International Trust Investment Corporation (CITIC) and Tianjin Elevator Company (TEC), a state-owned enterprise operated by the regional government of Tianjin province.

Although Deng Xiaoping, China's senior leader, was enthusiastic about carrying out the economic reforms he had set in motion, many major multinational companies were skeptical about the country's political future. Deng, 78 years old, was expected to step down soon. Would his successor support his ideology? His likely successor, Zhao Ziyang, was 61. It was questionable whether Zhao had enough stature to resist other senior leaders who opposed Deng's reforms. What would Zhao's failure mean to the multinationals that had committed time, personnel, and money to China? Would they ever realize a return on their investments, especially when the Reminbi (RMB, Chinese currency, trading officially at 2.34 to \$1) was not a hard currency? On the other hand, China was an enormous market, and elevator technology was essential to building its infrastructure. If business went well, the Chinese market could easily account for as much as 30% of the world market.

Whereas the management of Otis's Pacific Area Operations was enthusiastic about the potential joint venture, senior management at the worldwide headquarters had its concerns, wondering whether or not to accept the proposal, and, if so, how to run the business.

The Elevator Industry

In 1983, the worldwide market for elevators (new equipment and service) was about \$9.2 billion. North America, with \$3.7 billion in bookings, represented the largest market, followed by Europe with bookings of \$3.1 billion. The Pacific area and Latin America had bookings of \$1.8 billion and \$0.17 billion, respectively. Analysts forecasted that most growth for the next five years would be in the Pacific area, especially in countries such as Japan, India, Thailand, Taiwan, and China.

Thomas W. Malnight and Vera M. Lam, MBA, 1990 prepared this case under the supervision of Professor Michael Y. Yoshino as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. We gratefully acknowledge the information and analysis provided by Kaye Yoshino and Sarah Collins, Business Information Analyst, Harvard Business School

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Although the elevator industry was not considered capital- and technology-intensive, it was difficult for an elevator company to become a successful global player. Several large global players had long histories in the elevator business. The installed base (number of previously installed units), a big factor in achieving economy of scale in servicing the elevators, could be achieved only through time, long-term capital investment, and aggressive marketing. It was thus not unusual for a company to be the market leader in one area and to have almost no presence in others. Otis, with 135 years in the elevator business, was the leading company with a significant presence throughout the world.

Because elevator technology using electromechanics was not proprietary, especially for low-end (hydraulic) elevators, entry barriers for small independent firms to service the elevators were low. To develop a long-term competitive advantage, elevator companies were spending more on research to develop programmable and microprocessor-driven control systems that were not easily copied and thus were more difficult to maintain. Sophisticated test sites were built to enhance elevator quality and technical performance.

The elevator business comprised three areas: new equipment, modernization, and maintenance and repair. New equipment sales was a long process dealing with a wide range of personnel. Architects, developers, building owners, building managers, and, occasionally, tenants each focused on different aspects of elevators. For example, architects might pay attention to the design, building managers to the technical performance, developers and building owners to the price, and tenants to the ride's smoothness. All these factors made the completion of a sale complex.

Modernization was the elevator industry's term for renovation, which included both the interior and exterior. Interior modernization usually meant replacing the control system with a more sophisticated microprocessor. Exterior modernization ranged from replacing the cab to completely redesigning the elevator's appearance. With the slowdown in building construction in some markets, companies emphasized selling modernization packages.

Maintenance was a major part of the elevator business, as well as the most profitable. It was particularly important to building managers in the United States because of the high cost of liability lawsuits. Elevator maintenance was a high-margin business in most markets. In North America, hundreds of small firms advertised services equal to those of the original equipment manufacturers at 60% to 70% of their prices. In countries such as Japan, Singapore, and France, it was customary for the original equipment manufacturers to maintain and service their own equipment.

According to industry statistics, the average gross margin for new equipment sales was 5%; for modernization, it was 25%; and for service, 45%.

Product Types

With the advent of new technology, especially the increasing use of microprocessors, elevator performance improved dramatically. In 1983, most elevator companies manufactured three types of elevators: gearless traction, geared traction, and hydraulic. Gearless traction elevators were usually used in buildings more than 10 stories high for speeds from 500 to 1,800 feet per minute. They required large, slow-speed electric motors (about 50 to 200 revolutions per minute), directly connected to a large, grooved drive sheave about 30 to 48 inches in

diameter. One end of a steel cable was attached to the top of the elevator and then wrapped around the drive sheave in special grooves; the other end was attached to a counterweight that slid up and down the shaft on its own guide rails. With this weight, traction -- and thus the lifting -- was gained by the pressure of the wire ropes on the sheaves' grooves. Actually, the electric motor did not have to lift the full weight of the elevator car and its passengers. The weight of the car and about half its passenger load was balanced by the counterweight, which slid down as the car rose.

Geared traction elevators, usually used in buildings of up to 20 stories, differed very little from gearless ones. They were used usually at speeds from 200 to 500 feet per minute and for loads up to 30,000 pounds. As the name implies, the system consisted of a high-speed electric motor driving a worm- and gear-type reduction unit, which drove the sheave. Such a design produced a relatively slow speed with the high torque necessary for a wide range of passenger, freight, and dumbwaiter applications.

Hydraulic elevators were used exclusively in low-rise buildings, usually up to four stories. With speeds rarely exceeding 200 feet per minute, their major cost advantage was that they did not need any penthouse or overhead support for machinery. The elevator was mounted on a plunger, in a cylinder that extended into the ground to a depth equal to the height that the elevator would rise. Of relatively simple operation, the system required only an electric pump to force the oil into the cylinder to raise the elevator.

Competition

Competitors in the elevator industry ranged from divisions of multibillion-dollar conglomerates to small, local firms with a handful of employees and no manufacturing capabilities of their own. In 1983, the two largest worldwide suppliers were Otis and Schindler, with 20% and 12% market shares (based on total orders received), respectively. Schindler was headquartered in Hergiswil, Switzerland. Elevators and escalators accounted for 85% of its revenues, the rest coming from railroad cars and other businesses. Schindler, generating approximately \$1 billion in elevator and escalator revenues in 1983, had been expanding aggressively through acquisitions in Europe, where it ranked second to Otis.

Kone, of Finland, another strong competitor with a well-established name, posed an increasing competitive threat in technology. It ranked third in Europe behind Otis and Schindler. The company had doubled its European market share in the previous ten years through acquisitions and had also progressed in product development. Kone had a small but growing presence in North America.

Mitsubishi Electric Corporation, the leader in elevator sales in the Pacific region, was a large and powerful diversified manufacturer of electrical and electronic products. Besides its strong financial resources and quality products, Mitsubishi was perceived to be as strong as Otis technologically. In North America, Mitsubishi benefited from the growing presence of Japanese investors and owner-developers, some of whom had reportedly contracted with Japanese elevator companies regardless of price or other considerations. Mitsubishi was not a major competitor for Otis in Europe, but it was strong in the Middle East and South Africa.

Hitachi Ltd., which produced a variety of electronics equipment, electrical machinery, and appliances, was second in the Pacific area. Though similar to Mitsubishi in quality and technology, it was not as aggressive in expanding overseas.

Competition in many markets was increasing, with aggressive competitors seeking to expand their positions.

Company Background

The world's first passenger elevator was installed by Otis in the store of E.V. Haughwout & Company, dealers in French china and glassware, at Broadway and Broome Street in New York City on March 23, 1857. It reached the fifth floor and could lift 1,000 pounds at the rate of 40 feet per minute. The technology was quite primitive when compared with that available in the early 1980s: the elevator's power came through a series of shafts and belts driven from a central steam engine in the building. The first hydraulic elevator was installed in New York City in 1878 and by 1889, Otis had developed the first electric elevator. Directly connected through a worm gear, the first two electric elevators were installed in the Demarest Building, and by 1903, Otis installed the first gearless traction elevator in the Beaver Building, both in New York City. During the next seven decades, Otis continued to develop its market around the world and maintained its leading position.

In 1976, United Technologies Corporation acquired Otis, making it a wholly owned subsidiary. With about \$2 billion in total sales in 1983, Otis accounted for more than 20% of the elevator market, estimated at about \$9.2 billion (based on orders received). Otis was the only company with double-digit market share in each of the world's major regions: North America, Latin America, Europe/Mideast/Africa, and Asia/Pacific.

Worldwide, Otis worldwide comprised four major operations: North American Operations (NAO), European and Transcontinental Operations (ETO), Pacific Area Operations (PAO), and Latin American Operations (LAO). Each one, headed by a president, was fairly decentralized. In 1983, NAO had sales of about \$790 million, ETO about \$750 million, PAO about \$255 million, and LAO about \$100 million.

In 1983, based on total orders received, Otis maintained a number-one position in North America, Europe, and Latin America; in Japan, it trailed Mitsubishi, Hitachi, and Toshiba. Otis's goal was to continue increasing its market share and profit margin where it already was the leader and to improve its position in areas where it was not. To achieve this goal, its strategy was to invest aggressively in R&D, to form joint ventures with powerful local companies, and to acquire small, well-run, high-potential local elevator manufacturing and servicing companies. In 1983, Otis introduced new hydraulic and geared products as well as a new modernization package. Otis also made a major effort to increase its market presence in the Pacific area. It won five of the six major contracts in Hong Kong and Singapore in 1982 and formed a new venture in Taiwan.

Otis's Pacific Area Operations

In most countries in the Pacific area, Otis had been the first elevator company to establish sales and manufacturing operations. Since there were only a handful of well-known elevator manufacturers in the early 1900s, Otis aggressively expanded its presence. It entered Australia in 1883 and installed elevators in Shanghai, China, and throughout New Zealand in the 1920s.

Because the elevator business was closely tied to the construction industry and because of other macroeconomic and political factors, it was not unusual for Otis to enter and exit the business after several years of operation in countries that had undergone political turbulence. For example, Otis entered China in the early 1920s and exited after the country fell into the hands of the communists in 1951. **Exhibit 1** details Otis's presence in the Pacific area; Otis had at least 50% ownership in each of these operations.

Explosive economic growth in the Pacific area in the early 1980s resulted in the steady increase in the size of the elevator market. However, the dominant players remained the Japanese companies, including Mitsubishi and Hitachi, despite their late entrances to the elevator industry. The size of the total market in the Pacific area was about \$1.8 billion in 1983. Otis had a 14% share or \$260 million, trailing Mitsubishi and Hitachi, who reported bookings of \$468 million and \$414 million, respectively. **Exhibit 2** outlines 1983 market share data, broken down by dollar and unit volume, of the major players.

China in 1983¹

Economic and Political Developments in China

"We have stood up." With those words to the Chinese people on October 1, 1949, Mao Zedong proclaimed the establishment of the People's Republic of China and began his "revolution" to transform China into a socialist and communist society. Under communist leadership, the new "people's democratic dictatorship" would be a united front of and for the people, exercising dictatorial policies towards those deemed "enemies of the people." Chairman Mao headed the party and set the policies that the government and military implemented.

After reconstructing the national economy left in shambles by the civil war, Mao marked the beginning of his communist crusade with the first Five-Year Plan (1953-1957). Following the Soviet model, Mao introduced collectivization in agriculture with nationwide land reform equalizing land tenure. Banking, industry, and trade was nationalized and the focus was on developing heavy industry.

By 1957 however, severe agricultural stagnation prompted Mao to depart from the Soviet model and turn to a rapid, large-scale transition to communism despite intra-party opposition. The Great Leap Forward (1958-1965) was inspired by Mao's belief that mobilizing the masses, raising their political consciousness, and providing moral and ideological incentives could produce spectacular economic results. Communes were established and collective effort was emphasized. To accelerate the process, the modernization of industrial and agricultural sectors was to take place simultaneously. Taking advantage of China's rural backwardness and manpower surplus, Mao directed the localization of industry, whereby the peasants set up "backyard furnaces" to produce steel, and factory workers cultivated crops near factories.

1. This section was written by Kaye Yoshino and Sarah Collins. The material presented in this section draws heavily from the following sources: Socialism and Modernization in China, #9-388-115, Rev. 3/89; Donald S. Zagoria, "China's Quiet Revolution," *Foreign Affairs*, Spring-Summer 1984, pp. 879-903; A. Doak Barnett, "Ten Years After Mao," *Foreign Affairs*, Fall 1986, pp. 37-65.

Though initially inspiring a national frenzy, the movement soon collapsed under the burden of its own idealism. The country faced severe economic dislocation, from industrial stagnation to mass starvation. In the seven years that followed, Chinese politics changed radically. Mao's extreme policies led to ideological division within the party with the majority of the leadership turning against him. Pragmatic party leaders worked to reverse Mao's economic policies. Deng Xiaoping, an increasingly influential pragmatic leader, explained that, to a pragmatist, "It did not matter whether a cat was black or white, it was a good cat as long as it caught mice." For Mao, however, nothing was more important than the color of the cat.²

With the growing power of pragmatists like Deng and the increasing polarization of the party, Mao's next campaign was the Cultural Revolution in which he directed the masses to overthrow the capitalists and the bourgeoisie in the upper echelons of the power structure. Millions of students and rural youths formed the Red Guard and purged thousands from the party, government, and academia. The Cultural Revolution failed to create Mao's new order, while wreaking social and economic destruction and suffering. As many as 100 million people were persecuted and up to 400,000 died.

By 1978, two years after Mao's death, the pragmatists led by Deng Xiaoping rose to power, seeking to de-Maoize China and transform her from a poor backward nation to a modern socialist state by the year 2000. Shifting the focus from ideological dogma to pragmatic reform policies, Deng emphasized the leadership's commitment to the Four Modernizations--of agriculture, industry, science and technology, and rapid and sustained economic growth. He aimed to raise agricultural and industrial output, encourage the pursuit of scientific and technological knowledge, and modernize the military, which was technologically 20 to 30 years behind the United States and the Soviet Union. In terms of economic growth, the stated goal was to quadruple China's per capita GNP by the year 2000 from the level of less than \$300 in 1975.

Deng's economic reform program showed impressive results. In agriculture, productivity rose as the communes were replaced by a contract system based on material incentives. In the industrial sector, the focus shifted from heavy to lighter industry, material incentives were reintroduced, and enterprises were given greater autonomy. The increase of private enterprise, expansion of the tertiary sector, and rising living standards marked by increasing salaries and per capita consumption reflected a greatly invigorated urban sector. Exhibits 3 and 4 summarize the progress made through 1982 under Deng's leadership.

Reforms also affected the centrally controlled pricing system, which by 1979 yielded prices that bore little relation to production costs or supply and demand. Deng began experimenting with market forces, allowing them to partially regulate prices and distribution. China was moving toward a system that deemphasized the state's role in pricing and distribution, opening the way for the revival of traditional small-scale free markets in both the rural and urban sectors.

In the political realm, Deng wanted to streamline the government and make the bureaucracy and economic units modern and more efficient. In addition to reducing the number of state officers, in 1982, the government reduced the number of state ministries and commissions from 98 to 52. To make power difficult to overcentralize, the chairmanship of the party was abolished

2. Ranbir Vohra, China's Path to Modernization, (Englewood Cliffs, N.J.: Prentice-Hall, 1987), p. 225.

and the party secretariat became the main body. Moreover, administrative power was transferred from the communes to local government bodies, reducing central party control over provinces, municipalities, and localities.

Deng's dramatic initiatives were not restricted to domestic measures but also involved the international community. Realizing China's urgent need for foreign capital, technology, and management techniques to modernize and ultimately become self-sufficient, Deng adopted an open-door policy that brought the nation out of isolation. Under the new policy, China's foreign trade increased dramatically. **Exhibit 5** presents selected trade statistics from 1970 through 1982.

However, despite encouraging developments, Western experts were cautious about China's political and economic future. The ramifications of current policies were unclear, and moreover, the liberalizing reforms to date had been mainly economic, lacking parallel measures in the political realm. The Chinese had yet to hold free elections and did not enjoy civil liberties such as freedom of speech, assembly, and the press.

Furthermore, an immediate uncertainty was whether the reform program could continue after Deng's death (in 1983 he was 78 years old). Even with a pragmatic successor, the future of the reforms depended heavily on how well the party served the new leader, as policies were ultimately implemented with the cooperation of the middle and lower levels of the bureaucracy. Problems of party discipline threatened to arise because many reforms had undermined the power and prestige of those who had come to power during the Cultural Revolution as "revolutionary purists."

Deng's successors also faced the challenge of assessing the extent of the reforms. Like Deng before them, they had no blueprint or set agenda. Already the economic system of the early 1980s, with its experimental partial incorporation of market forces, was highly unstable. The reforms had created a number of new unforeseen problems. Economic progress had been highly uneven among sectors, regions, and individual households. Results of industrial reforms were disappointing compared to those in agriculture. Labor productivity, for example, showed little or no improvement, actually declining in 10 out of 15 industries in 1981. The disparate growth in agriculture from decollectivization spawned a new class of richer peasants amidst the poor majority, resulting in growing regional tensions. To Western observers, movement toward a market economy was desirable, but price reform would most likely lead to considerable economic dislocations, including substantial unemployment and high inflation.

Chinese Policies Toward Foreign Direct Investment

To solicit foreign trade and direct investments, China adopted novel measures. In 1979, four "Special Economic Zones" were opened in southern China, with preferential rates for duties, rents, and income taxes for overseas investors. By 1981, the central government extended some of these policies to other provinces and municipalities for further encouragement. (See **Exhibit 6** for a map of China.) The Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investments was adopted, followed by commercial legislation guiding the activities of foreign enterprises. The law is presented in **Appendix I**.

Between 1979 and 1981, the amount of foreign direct investment reached just over \$1.1 billion. Over 60% of the total foreign direct investment was made by the Chinese in Hong Kong and Macao. The business ventures took several forms including joint ventures, cooperative

enterprises (contractual ventures), foreign loans, and compensation trade. Compensation trade was an arrangement in which the foreign company supplied the equipment and technology to the Chinese enterprise, which in turn made its payments in goods produced. Exhibit 7 presents the amount of FDI by types from 1979 to 1983.

The Joint Venture Situation in China

Between 1979 and 1982, only 40 joint venture agreements involving about \$100 million of foreign investment had been approved. Though highly attractive to Chinese officials seeking to maximize the importation of Western technology and management knowledge, joint ventures proved to be unpopular among Western businesses who found a number of major obstacles, some of which were:³

1. The Chinese looked to joint ventures to generate export, while the foreign companies wanted to penetrate the enormous Chinese market.
2. China had a serious shortage of qualified managerial and technical personnel, with two out of three managers often having no qualifications beyond middle school. However, the ostensible solution of expatriate managers and technicians training and working with the Chinese personnel increased expenses for the foreign firm and raised tensions due to linguistic and cultural differences.
3. Foreign firms had to comply with government restrictions that may have seemed arbitrary and lost some of their autonomy in conducting business. From having to rely on Chinese partners to assure access to raw materials and utilities, to submitting to government price controls for joint venture products, foreigners faced frustrating obstacles.
4. There was uncertainty concerning the dollar/yuan exchange rate affecting the calculation of a venturer's funds into and out of China. While the official exchange rate was roughly 2 RMB per dollar, some Chinese enterprises were given a more favorable rate, such as 2.8 RMB per dollar, to encourage export.
5. There was a lack of effective protection for industrial property rights, making enterprises vulnerable to potential technology and information leaks.
6. The law allowed the distribution of profit to the partners in proportion to their respective capital contributions. Net profit was determined by (1) ascertaining the gross profit (gross revenue less expenses), (2) deducting the income tax from the gross profit, and (3) deducting from that amount a certain percentage to be set aside for three funds, namely the reserve fund, the bonus and welfare fund, and the expansion fund. The percentage share of these funds was decided through negotiation but seldom exceeded 15%.
7. Joint ventures had to be approved by the Ministry of Foreign Economic Relations and Trade and were under its tight control.

3. Jerome Cohen, "Equity Joint Ventures," The China Business Review, November-December 1987, pp. 23-30.

8. The government would not approve an investment in China that required any dispute settlement in accordance with the law of another country. However, the Chinese law on contracts and joint ventures was unclear and incomplete in this area.

Negotiation between Chinese and foreign enterprises, at both the national and provincial levels, was a great hurdle for most foreigners. In addition to the differing interests and priorities between the negotiators, the Chinese process itself was steeped in tradition dating back 2,000 years and required knowledge of elaborate rules and formalized strategies. Thus the uninitiated foreigners usually soon found themselves frustrated and in highly disadvantageous positions.

CITIC

Previously, the Bank of China (directly subordinate to the State Council) had a monopoly among Chinese institutions to make foreign exchange loans to Chinese concerns within China. However, this was no longer the case as new merchant banking bodies emerged, primarily the China International Trust Investment Corporation, founded in 1979 to facilitate foreign investment in China. Set up by the personal order of Deng, CITIC was a prestigious company with considerable autonomy that allowed it to buy, sell, and invest abroad without having to contend with the massive complexity of the state and party apparatus.⁴ Thus it was at the forefront of organizations involved in soliciting and applying outside capital and technology. Its statutory function was "to introduce, absorb, and apply foreign investment, advanced technology, and equipment...for China's national construction."⁵ CITIC activities ranged from manufacturing to merchant banking to issuing bonds on international capital markets. Investments ranged from timber to chemicals to real estate. CITIC had two boards of directors, a more powerful executive board with 13 members, and a nonexecutive board with 60 members representing various government ministries, provinces, and the 14 coastal cities open to foreign investment.

The Chinese Elevator Market

In 1978, shortly after Deng informed the world of China's economic reforms, CITIC invited Otis and Schindler to assess the country's investment opportunities. The plan was to investigate joint venture possibilities with Beijing Elevator Company, a state-owned enterprise. Both Otis and Schindler sent management and engineering teams to Beijing to work on the proposal. It was the first time China officially invited foreign companies for a joint venture proposal since it became a communist country 29 years earlier. Negotiations were quite difficult and inefficient due to language and cultural barriers. China clearly lacked experience and formal policies in dealing with foreign firms. The Chinese expressed a desire for a large infusion of technology and hard currency in plants and equipment. After two years of negotiations, Schindler won the first equity contract in elevator production with the Chinese government.

One of the Otis officials commented on the joint venture:

"The Chinese government wanted technology, but we were not willing to provide our newest technology to them. We believed their appetite was too big! They did not need the latest technology. We thought we were fair by giving them what was appropriate and what they could absorb without too much difficulty."

4. Lynn Pan, *The New Chinese Revolution* (Chicago: Contemporary Books, 1988), p. 110.

5. The China Business Review.

The China-Schindler joint venture was successful. Created in July 1980, China-Schindler Elevator Company was the first large undertaking between Chinese and Western firms. This kind of joint operation normally recorded a loss for approximately three years, but China-Schindler's first year showed a profit of \$4 million (July 1980 to June 1981) by selling 700 units domestically and developing overseas sales to approximately 40 countries.

Additional cooperative agreements were made shortly thereafter with Japanese suppliers. A contract, signed between Hitachi Corporation and the Guangdong Electrical-Engineering Industry Bureau in 1981, called for Hitachi to provide technology, train Chinese staff, and sell elevator parts to the participating Guangdong factory. In return, Hitachi would eventually buy back parts from the Chinese elevator company.

China's commitment to economic reform led to rapid growth in the construction industry, especially in urban areas. As a result, the unit market for elevators grew steadily at 18% annually from 1980 to 1982. In 1983, 4,600 units were installed, two-thirds of which were freight elevators. There were more than 100 Chinese elevator companies in 1983, mostly small regional firms at county and community levels. The products and production technology used by these companies were 15 years behind those of Otis or Schindler. Their products were mostly low-rise elevators of poor quality. The industry in China was fragmented: small firms had 40% of the market and the other 60% was shared by seven larger firms.

In 1983, China-Schindler enjoyed a 24% market share, followed by 11% for Tianjin Elevator Company, one of China's largest elevator companies. **Exhibit 8** gives a breakdown of units sold from 1980 to 1983.

The Joint Venture Negotiation

In December 1982, CITIC approached Otis for the second time to investigate a possible joint venture with the Tianjin Elevator Company (TEC) in Tianjin, China's third largest city, after Beijing and Shanghai, and located in eastern Hebei province. Tianjin, an important transport and trading center since 1368, was China's second largest manufacturing center, after Shanghai, and the leading port in northern China. Between 1973 and 1981, the Chinese government had added 15 berths to the port and allocated substantial additional funds for its development to meet the needs of modern shipment and the rapid growth of China's foreign trade.

Starting in 1949, heavy industry had developed in Tianjin, and the existing industrial base was consolidated for greater productivity. Major activities included the production of heavy machinery, chemicals, iron and steel, and shipbuilding and repair. Textiles was Tianjin's chief light industry; other products included processed foods, hides, rubber goods, and paper. Industry was largely under the jurisdiction of the municipality, with about 40% of production subject to local price setting, planning, and raw-material allocation.

Tianjin Elevator Company (TEC)

TEC, established in 1956 by the Chinese central government but managed by the City of Tianjin, began exporting to Hong Kong, Macao, Thailand, and Africa in 1967. In 1983, with a total of 2,600 employees and 500 units sold, it was considered, overall, a profitable business. **Exhibit 9** gives details on TEC's product line.

TEC had three manufacturing facilities, responsible for producing parts and components and assembling and testing elevators, which were 10 to 24 miles apart. Their buildings were outdated in design (Russian, circa 1910) and lacked efficient layout and modern manufacturing methods; their technology was about 25 years old. Although TEC was a state-owned enterprise, its tie with the central government was very loose. It was essentially under the control of the provincial and city officials, with a management team usually appointed by Tianjin's mayor.

The Negotiation

In July 1983, Otis's senior management gave PAO permission to pursue joint venture discussions with TEC. Negotiations began two weeks later. A senior manager involved in the negotiation commented:

"The process took ten times longer than negotiating a joint venture with an American company. Geographical distance, language barriers, and inexperienced personnel from the Chinese side lengthened the negotiation. But we really wanted this deal. We wanted to establish a presence in China; we wanted to be able to manufacture, sell, and install elevators in all of its provinces. Therefore, we were willing to invest money, time, and energy to make this happen. For us, sourcing and export were secondary goals because we realized that it would take quite some time for us to reach that point."

Another Otis executive involved in the negotiations commented:

"The atmosphere was quite tense because there was a lack of mutual trust and a difference in goals. Each side worried that it was being taken advantage of by the other."

After a few months of initial negotiations, TEC proposed that Otis have 30% participation in the joint venture, TEC 65%, and CITIC 5%. Otis preferred to contribute equipment rather than hard currency, but TEC, represented by the Tianjin municipal government, preferred that Otis invest hard currency. The proposal suggested that TEC commit facilities and cash and that CITIC invest cash. TEC would also contribute land, buildings, equipment, and inventory. As for management control, TEC, Otis, and CITIC would have five, three, and one seat on the board of directors, respectively. **Exhibit 10** provides a detailed description of the terms of the proposal and a pro forma of the income statement.

The Decision

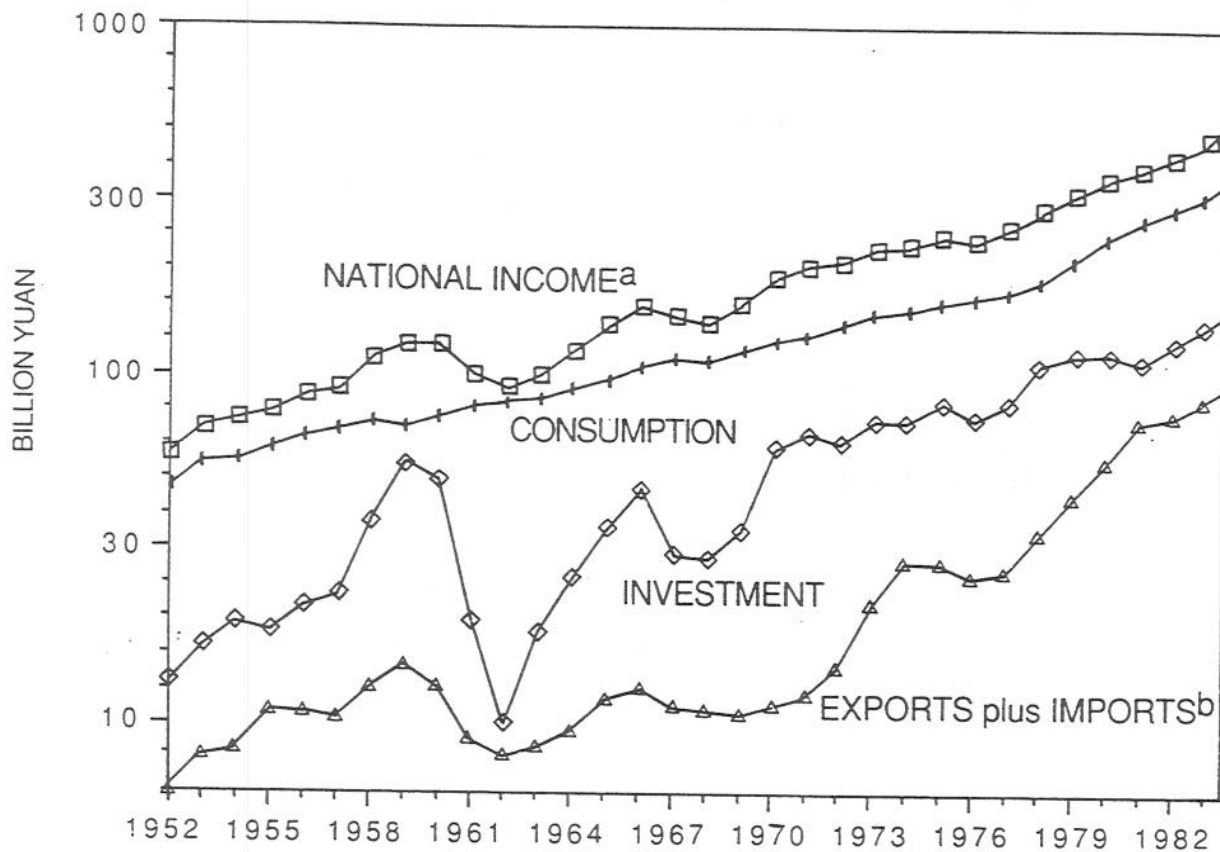
At Otis's headquarters in Farmington, Connecticut, senior management was reviewing the joint venture proposal just received from Otis's PAO headquarters in Singapore. The Chinese clearly wanted technology, export, and equity participation from Otis. Although estimates of the final investment amount for a 30% share had not been completed, PAO management indicated it would be about \$2 million. If Otis agreed to the terms, it would be the first time that Otis would have minority control in a joint venture. Yet Otis was expected to manage the joint venture and upgrade the existing manufacturing facilities. The situation reminded one senior manager of a Chinese proverb: "same bed, different dreams." Senior management was faced with a number of issues. First and foremost was whether to enter China at that time, and whether the 30% ownership proposed by the Chinese government was adequate. Should Otis ask for more? Given the political situation and the suggested ownership pattern, what conditions of entry into China should Otis insist on? Otis had just a few days to decide because PAO senior management was extremely enthusiastic about this joint venture and was eager for a positive response from headquarters.

Exhibit 1: Otis's Presence in the Pacific Area

	<u>Year Earliest Entity Formed</u>	<u>Year Latest Entity Formed</u>
Australia	1883	1920
Hong Kong	1936	1964
India	1931	1953
Japan	1931	1973
Malaysia	1961	1983
New Zealand	1923	1923
Singapore	1949	1981
Taiwan	1938	1983
Thailand	1959	1959

Exhibit 2: Pacific Area Market: 1983 Market Share Data (based on total orders received)

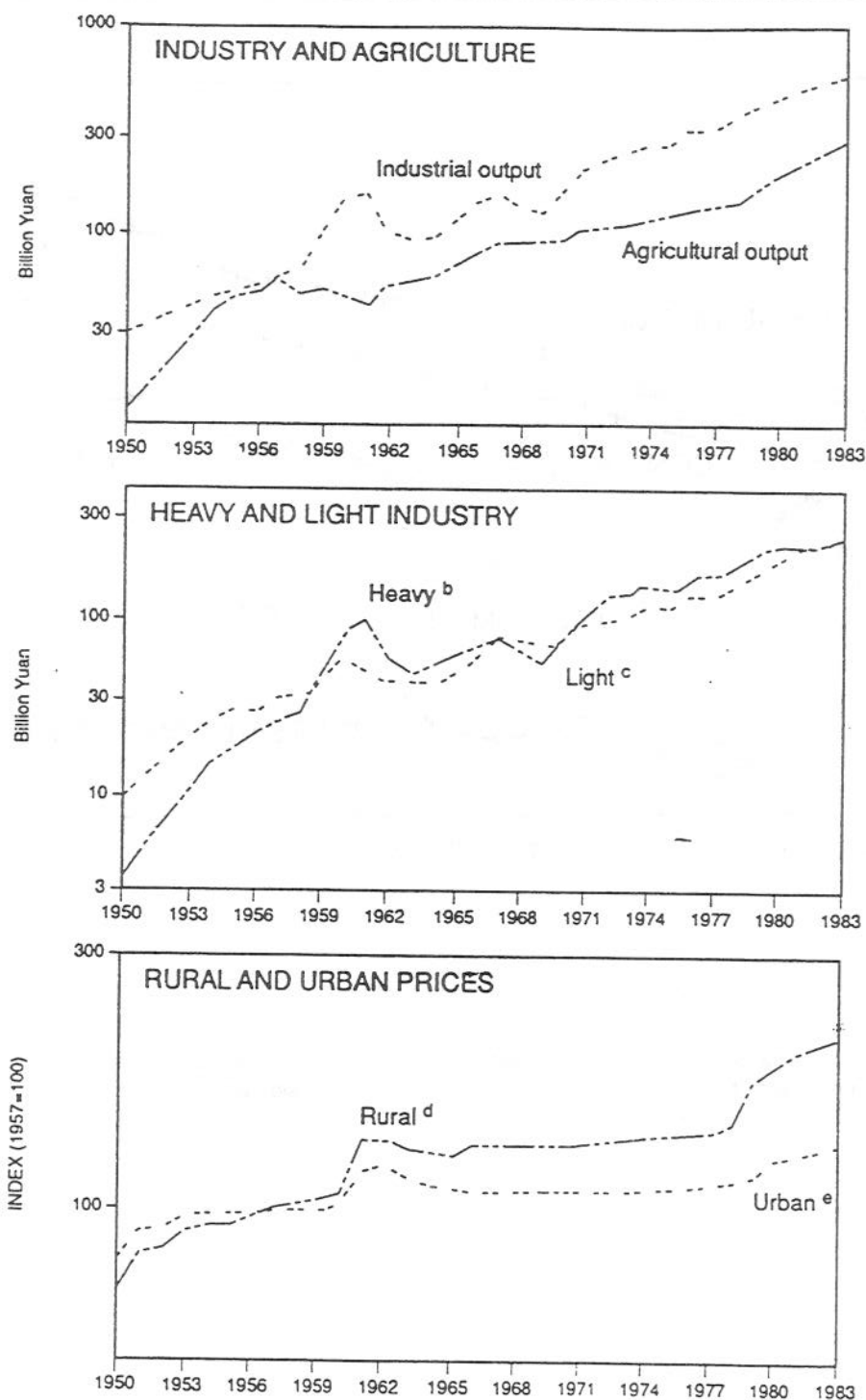
<u>Company</u>	<u>New Equipment Units</u>	<u>New Equipment Value</u>	<u>Total Market Value</u>
Otis	16%	18%	14%
Schindler	2%	3%	2%
Kone	1%	1%	1%
Fujitec	10%	9%	6%
Mitsubishi	24%	24%	26%
Hitachi	23%	22%	23%
Toshiba	13%	13%	10%
Market Size	23,300	\$925 mil.	\$1,800 mil.

Exhibit 3: Chinese National Income Components

Source: Compiled from data from China's State Statistical Bureau

^aThe socialist definition of national income is similar to GNP, except that it excludes "nonmaterial sectors" such as services, utilities, education, health, banking, and insurance. These are not considered productive sectors in socialist national income accounting.

^bA measure of the "openness" of the economy

Exhibit 4: Industrial and Agricultural Output: 1950 - 1983 (logarithmic scales)

Source: Compiled from data from China's State Statistical Bureau

^a See note A in Exhibit 2.

^b Production of capital equipment, raw materials, and intermediates such as construction materials and chemicals.

^c Remaining industrial sectors.

^d Price index of farm and sideline products in rural areas.

^e Price index of basket of goods consumed by industrial workers.

Exhibit 5: Balance of Payments, 1970-1982 (in billions of U.S. dollars, unless otherwise noted)

	<u>1970</u>	<u>1978</u>	<u>1980</u>	<u>1982</u>
Exports	\$2.2	\$10.1	\$18.9	\$21.1
Imports	<u>2.3</u>	<u>10.3</u>	<u>19.2</u>	<u>16.9</u>
Trade balance	-0.1	-0.2	-0.3	4.2
Net services and transfers	-	<u>0.1</u>	<u>-0.6</u>	<u>1.6</u>
Current account	-	-0.1	-0.9	5.8
Direct investment, net	-	-0.1	0.0	0.4
Other long-term capital, net	-	<u>-0.8</u>	<u>1.5</u>	<u>0.0</u>
Basic balance	-	-1.0	0.6	6.2
Short-term capital, net	-	-0.2	0.1	0.1
Errors and omissions	-	<u>0.4</u>	<u>-0.4</u>	<u>0.0</u>
Overall balance	-	-0.8	0.3	6.3
Change in reserves (- = increase)	-	0.8	-0.3	-6.3
Total reserves	-	-	2.3	11.1
Exchange rate (yuan/\$)	2.46	1.68	1.50	1.89
<u>Exports by commodity (millions of U.S. dollars)</u>				
Food and beverage	\$1,005	\$3,205	\$4,664	\$5,068
Crude oil and minerals	115	1,325	3,592	4,052
Manufactured products	1,035	5,555	10,619	14,316
of which:				
textiles	350	1,685	2,756	2,940
clothing	160	730	1,653	2,440
Petroleum products	0	235	1,261	1,627
chemicals	110	475	1,181	1,304
<u>Imports by commodity (millions of U.S. dollars)</u>				
Food and beverages	\$360	\$1,365	\$3,033	\$3,573
Consumer durables	15	110	620	656
Industrial inputs	1,330	6,845	9,887	8,865
Capital goods	340	2,000	5,640	3,595

Source: John L. Davis, "China's International Trade and Finance," China Looks to the Year 2000, Joint Economic Committee, vol. 2, 1983.

Exhibit 6: Map of China and the Far East

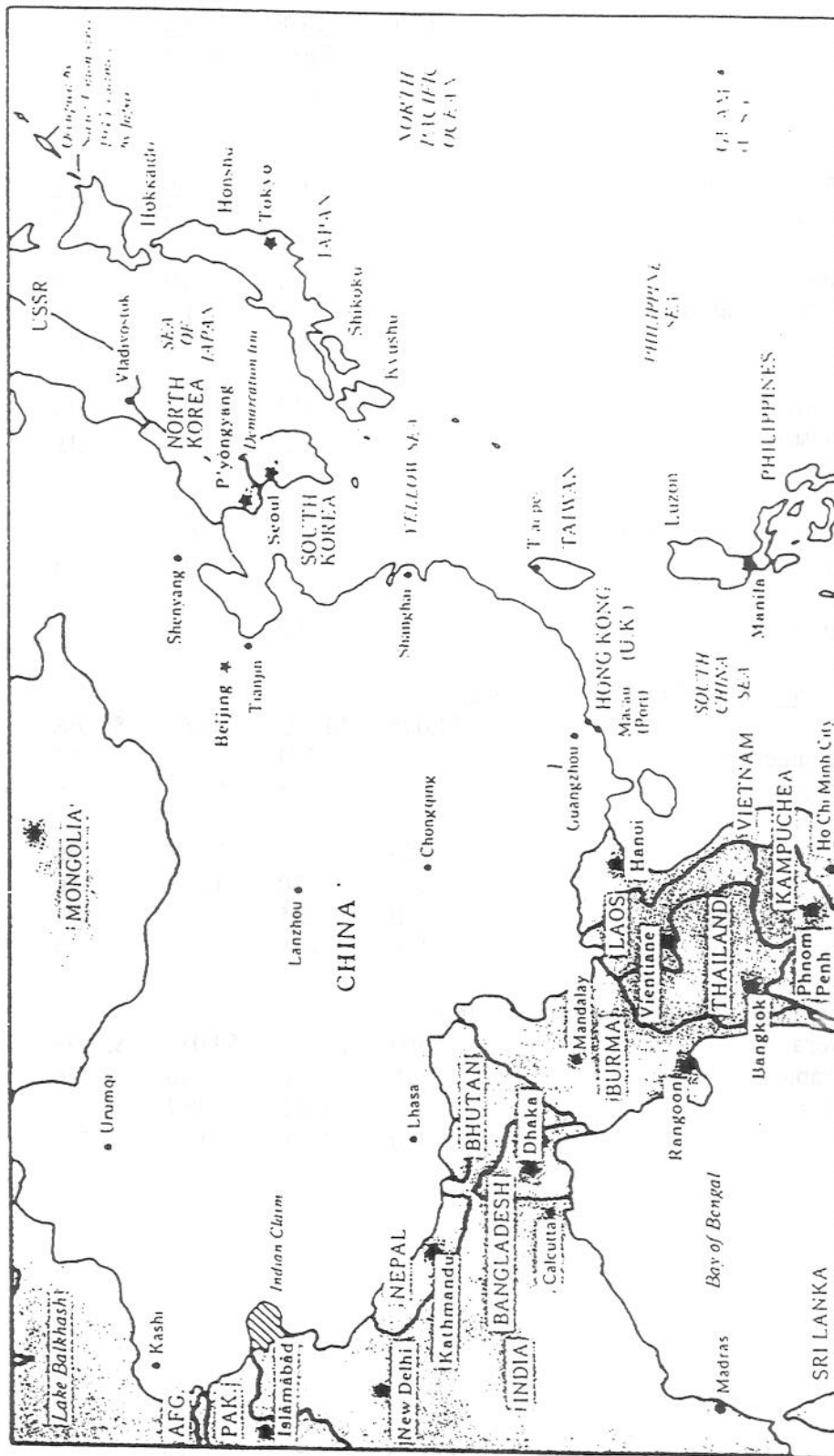


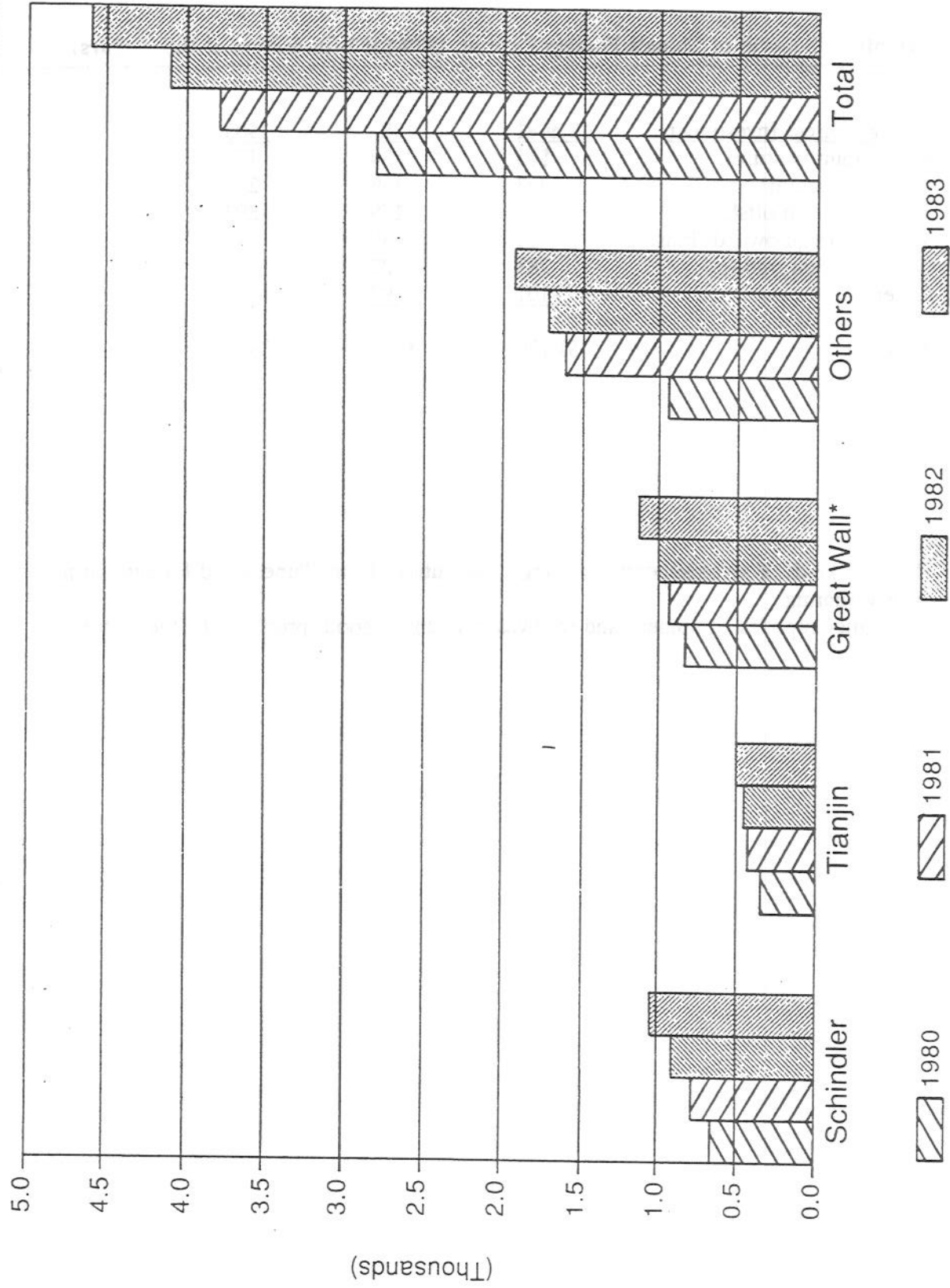
Exhibit 7: Sources of China's Foreign Capital, 1979-1983 (in million of U.S. dollars)

<u>Foreign Direct Investment</u>	<u>1979-81</u>	<u>1982</u>	<u>1983</u>
Equity joint ventures	\$65	\$34	\$74
Joint production*	353	178	227
Cooperation in offshore oil	317	179	292
Wholly foreign-owned firms	1	39	43
Compensation trade†	283	122	197
Other	<u>101</u>	<u>97</u>	<u>83</u>
Total	\$1,120	\$649	\$916

*Various kinds of arrangements involving contributions from Chinese and foreign partners and income sharing.

†Foreigner supplies equipment and receives payment in goods produced by the factory.

Exhibit 8: People's Republic of China: Elevator Units Sold



*Incl. Canton, Shenyang, Soochow & Yantai

Exhibit 9: Tianjin Elevator Company: 1983 Product line

<u>Type</u>	<u>Speed (M/S)</u>	<u>Load (Kg)</u>	<u>1983 Units Sold</u>
DC Gearless	2.5	750-1,500	12
DC Geared	1.5-1.75	500-1,500	150
AC Servo	1.5-1.75	500-1,500	38
AC 2-speed	1.0	500-1,500	175
AC & DC Hospital	0.5-0.7	500-1,000	125
Freight	0.5-0.7	500-3,000	

Exhibit 10: China Tianjin Otis Elevator Company (CTOEC) Proposal

Joint Venture Summary

Contribution toward total capitalization:

- 30% Otis
- 65% TEC
- 5% CITIC

Board of directors:

- 3 Otis
- 5 TEC
- 1 CITIC

Major decisions requiring Otis concurrence:

- Business plan
- Articles of association
- Capital spending more than \$100,000
- Operating policies

CTOEC would become the exclusive distributor of Otis products in China.

Otis would become the exclusive distributor of CTOEC products outside China.

Term:

- 30 years (renewable)
- At termination, Otis will be bought out at book value plus goodwill (to be negotiated).

TEC Agreement:

- Royalty (beginning in year 3)
- Plus reimbursement of direct technology-transfer expenses
- 10-year term (renewable)

Product Plan

Continue to upgrade existing products:

- some redesign
- mainly industrial engineering, methods, and management

Introduce Otis products:

- geared products first (Gamma 160S, AC 2-speed)
- microprocessor controls for geared elevators
- microprocessor controlled gearless elevators
- escalators

Exhibit 10: China Tianjin Otis Elevator Company (CTOEC) Proposal (cont'd)

Beginning Financial Structure

Investments:

- Otis invests cash.
- TEC invests facilities.
- CITIC invests cash.

Transfer of inventory financed by working capital loan from TEC or the Bank of China:

- 7.2% interest rate
- interest payable annually
- principal payable at JV discretion

Balance of facilities leased from TEC:

- 10-year operating lease
- lease rate at 10% of appraised value

JV assumes no liabilities (unless expressly included in the contract).

JV employs TEC workers.

Major Assumptions

Present domestic price level maintained

Exports (sold at 55% of domestic price level) rising to 25% of output by year 6

Units installed by CTOEC-from 15% of units sold in year 1 to 50% by year 5

Units under service contract by CTOEC-from 12% of units sold in year 1 to 40% by year 5

Taxes:

- tax holiday for first two years
- 16.5% next three years
- 33% thereafter

Exhibit 10: China Tianjin Otis Elevator Company (CTOEC) Proposal (cont'd)**Pro Forma Income Statement (in RMB 000s)**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>10</u>
Sales						
Domestic -- NE	50,025	58,634	69,337	79,372	89,320	152,141
Export	1,936	3,359	5,368	7,286	11,654	26,960
Installation	923	1,441	2,253	3,466	5,281	9,128
Service	597	884	1,334	1,961	2,900	9,589
Nonelevator	<u>1,942</u>	<u>1,811</u>	<u>1,624</u>	<u>1,651</u>	<u>1,451</u>	<u>1,261</u>
TOTAL	55,423	66,129	79,916	93,736	110,606	199,079
Margin						
Domestic -- NE	15,314	18,572	22,980	26,624	30,562	57,212
Export	-608	-1,028	-1,491	-1,917	-2,715	-3,716
Installation	257	499	910	1,589	2,718	6,134
Service	289	492	828	1,286	2,025	6,929
Nonelevator	<u>739</u>	<u>626</u>	<u>532</u>	<u>544</u>	<u>504</u>	<u>481</u>
TOTAL	15,991	19,161	23,161	28,126	33,094	67,040
SG&A	7,780	8,637	11,234	12,692	14,484	25,072
Operating income	8,211	10,523	12,525	15,434	18,611	41,968
Interest income	<u>42</u>	<u>-1,217</u>	<u>-1,269</u>	<u>-1,557</u>	<u>-1,184</u>	<u>322</u>
Pretax profit	8,253	9,306	11,256	13,877	17,426	52,290
Income tax	<u>0</u>	<u>0</u>	<u>2,026</u>	<u>2,498</u>	<u>2,137</u>	<u>14,958</u>
Net income	8,253	9,306	9,230	11,378	14,289	27,332
Return on sales	14.9%	14.1%	14.1%	14.8%	15.8%	21.2%

Pro Forma Balance Sheet (in RMB 000s)

	<u>Open</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>10</u>
Assets							
Cash	4,060	4,111	3,042	3,436	3,749	4,092	8,287
Accounts receivable	0	4,555	5,435	6,568	7,704	9,091	16,363
Inventory	18,000	20,553	22,483	25,206	27,383	30,422	42,298
Net plant/equipment	<u>5,940</u>	<u>11,617</u>	<u>18,494</u>	<u>25,712</u>	<u>27,763</u>	<u>27,848</u>	<u>21,323</u>
Total	28,000	40,836	49,454	60,923	66,600	71,453	88,271
Liabilities							
Short-term U.S.\$ debt	0	0	890	4,763	6,752	6,723	0
Short-term RMB debt	18,000	19,928	17,827	15,600	7,280	3,414	0
Accounts payable, other	<u>0</u>	<u>2,654</u>	<u>3,177</u>	<u>3,771</u>	<u>4,400</u>	<u>5,210</u>	<u>9,254</u>
Total	18,000	22,583	21,894	24,133	18,432	15,347	9,254
Equity	10,000	18,253	27,560	36,789	48,168	56,106	79,016
Return on assets		20.2%	18.8%	18.5%	20.8%	24.2%	47.9%
Inventory turnover		1.50	1.67	1.83	2.00	2.17	3.00
Asset turnover		1.61	1.47	1.45	1.47	1.60	2.28

Appendix I

The Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investments

(Adopted by the Second Session of the Fifth
National People's Congress on July 1, 1979.)

The Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investments was promulgated and became effective on July 8, 1979. Following is an unofficial translation of the full text of the law that appeared in China's Peking Review, No. 29, July 20, 1979.

Article 1. With a view to expanding international economic cooperation and technological exchange, the People's Republic of China permits foreign companies, enterprises, and other economic entities or individuals (hereinafter referred to as foreign participants) to incorporate themselves, within the territory of the People's Republic of China, into joint ventures with Chinese companies, enterprises, or other economic entities (hereinafter referred to as Chinese participants) on the principle of equality and mutual benefit and subject to authorization by the Chinese government.

Article 2. The Chinese government protects, by the legislation in force, the resources invested by the foreign participants in a joint venture and the profits due to them pursuant to the agreements, contracts, and articles of association authorized by the Chinese government as well as their other lawful rights and interests.

All the activities of a joint venture shall be governed by the laws, decrees, and pertinent rules and regulations of the People's Republic of China.

Article 3. A joint venture shall apply to the Foreign Investment Commission of the People's Republic of China for authorization of the agreements and contracts concluded between the parties to the venture and the articles of association of the venture formulated by them, and the commission shall authorize or reject these documents within three months. When authorized, the joint venture shall register with the General Administration for Industry and Commerce of the People's Republic of China and start operations under license.

Article 4. A joint venture shall take the form of a limited liability company.

In the registered capital of a joint venture, the proportion of the investment contributed by the foreign participants shall in general not be less than 25%.

The profits, risks, and losses of a joint venture shall be shared by the parties to the venture in proportion to their contributions to the registered capital.

The transfer of one party's share in the registered capital shall be effected only with the consent of the other parties to the venture.

Article 5. Each party to a joint venture may contribute cash, capital goods, industrial property rights, and so on, as its investment in the venture.

The technology or equipment contributed by any foreign participant as investment shall be truly advanced and appropriate to China's needs. In instances of losses caused by deception through the intentional provision of outdated equipment or technology, compensation shall be paid for the losses by the foreign participant.

The investment contributed by a Chinese participant may include the right to the use of a site provided for the joint venture during the period of its operation. In the event such a contribution does not constitute a part of the investment from the Chinese participant, the joint venture shall pay the Chinese government for its use.

The various contributions referred to in the present article shall be specified in the contracts concerning the joint venture or in its articles of association, and the value of each contribution (excluding that of the site) shall be ascertained by the parties to the venture through joint assessment.

Article 6. A joint venture shall have a board of directors of a composition stipulated in the contracts and the articles of association after consultation between the parties to the venture, and each director shall be appointed or removed by his or her own side. The board of directors shall have a chairperson appointed by the Chinese participants and one or two vice-chairpersons appointed by the foreign participants. In resolving an important problem, the board of directors shall reach a decision through consultation by the participants under the principles of equality and mutual benefit.

The board of directors shall be empowered to discuss and take action on, pursuant to the provisions of the articles of association of the joint venture, all fundamental issues concerning the venture, namely, expansion projects, production and business programs, the budget, distribution of profits, plans concerning labor and pay scales, the termination of business, the appointment or hiring of the president, the vice president(s), the chief engineer, the treasurer, and the auditors as well as their functions and powers, remuneration, and so on.

The president and vice president(s) (or the general manager and assistant general manager(s) in a factory) shall be chosen from the various parties of the joint venture.

Procedures covering the employment and discharge of the workers and staff members of a joint venture shall be stipulated according to the law in the agreement or contract concluded between the parties to the venture.

Article 7. The net profit of a joint venture shall be distributed between the parties to the venture, in proportion to their respective shares in the registered capital after the payment of a joint venture's income tax on its gross profit, pursuant to the tax laws of the People's Republic of China and after the deductions therefrom, as stipulated in the articles of association of the venture for the reserve fund, the bonus and welfare funds for the workers and staff members, and the expansion funds of the venture.

A joint venture equipped with up-to-date technology, by world standards, may apply for a reduction of or exemption from income tax for the first two to three profit-making years.

Foreign participants who reinvest any part of their share of the net profit within Chinese territory may apply for the restitution of a part of the income taxes paid.

Article 8. A joint venture shall open an account with the Bank of China or a bank approved by the Bank of China.

A joint venture shall conduct its foreign exchange transactions in accordance with the Foreign Exchange Regulations of the People's Republic of China.

A joint venture may, in its business operations, obtain funds from foreign banks directly.

The insurance appropriate to a joint venture shall be furnished by Chinese insurance companies.

Article 9. The production and business programs of a joint venture shall be filed with the authorities concerned and shall be implemented through business contracts.

In its purchase of required raw and semiprocessed materials, fuels, auxiliary equipment, and so on, a joint venture should give first priority to Chinese sources, but may also acquire them directly from the world market with its own foreign exchange funds.

A joint venture is encouraged to market its products outside China. It may distribute its export products on foreign markets through direct channels or through its associated agencies or through China's foreign trade establishments. Its products may also be distributed on the Chinese market.

Wherever necessary, a joint venture may set up affiliated agencies outside China.

Article 10. The net profit that foreign participants receive as their share after executing their obligations under the pertinent laws and agreements and contracts, the funds they receive at the time when the joint venture terminates or reduces its operations, and their other funds may be remitted abroad through the Bank of China in accordance with the foreign exchange regulations and in the currency or currencies specified in the contracts concerning the joint venture.

Foreign participants shall receive encouragements for depositing in the Bank of China any part of the foreign exchange which they are entitled to remit abroad.

Article 11. The wages, salaries, or other legitimate income earned by a foreign worker or staff member of a joint venture, after payment of the personal income tax under the tax laws of the People's Republic of China, may be remitted abroad through the Bank of China in accordance with the foreign exchange regulations.

Article 12. The contract period of a joint venture may be agreed on between the parties to the venture according to its particular line of business and circumstances. The period may be extended upon expiration through agreement between the parties, subject to authorization by the Foreign Investment Commission of the People's Republic of China. Any application for such extension shall be made six months before the expiration of the contract.

Article 13. In instances of heavy losses, the failure of any party to a joint venture to execute its obligations under the contracts or the articles of association of the venture, force majeure, or others, prior to the expiration of the contract period of a joint venture, the contract may be terminated before the date of expiration by consultation and agreement between the parties and

through authorization by the Foreign Investment Commission of the People's Republic of China and registration with the General Administration for Industry and Commerce. In instances of losses caused by breach of the contract(s) by a party to the venture, the financial responsibility shall be borne by the said party.

Article 14. Disputes arising between the parties to a joint venture which the board of directors fails to settle through consultation may be settled through conciliation or arbitration by an arbitral body agreed on by the parties.

Article 15. The present law comes into force on the date of its promulgation. The power of amendment is vested in the National People's Congress.



14

WARTON REPROGRAPHICS

Eli Lilly and Company: Drug Development Strategy (A)

On a sunny morning in February 1995, Project Manager Bianca Sharma looked out her office window at the Indianapolis skyline and contemplated the critical decisions facing Eli Lilly's R&D team, which was racing to develop a new generation anti-migraine drug. In a few hours, she would present her business recommendations on product development options to Lilly's Project Team Advisory Committee.

Lilly's new drug candidate promised to be unlike any other market entrant; as such, it could be positioned as the first of a new product subclass. One approach for Sharma's team, therefore, might be to field the best possible compound, even if that meant a further delay in market entry since exploring additional compounds would take time. However, not only would every month's delay to market cost revenue, it would also enable prior entrants to consolidate their market positions.

The role of a new technology, "combinatorial chemistry," also might be factored into Sharma's recommendations. This new technology would still be a curiosity on the horizon had not two Lilly scientists seen its possibilities for speeding up the product development cycle. At the same time, the technology was untried as well as controversial, and Lilly, should it invest in it too early, could waste millions of dollars and months of research pursuing false leads. At a time of unprecedented market pressures, this was a huge risk.

Sharma knew that the stakes were high and her recommendations important to the choice the Project Team Advisory Committee would make. She once again turned to the data laid out on her desk.

The Pharmaceutical Industry in the Mid 1990s

The worldwide pharmaceutical industry was one of the largest and most profitable of research and manufacturing businesses; by the mid 1990s, annual worldwide pharmaceutical sales were around \$250 billion, with roughly 80% originating in the industrialized G7 nations. Top blockbuster drugs targeted diseases of particular concern to industrialized nations, such as depression, peptic ulcer disease, hypertension, and cholesterol-reduction. (See Exhibit 1: U.S. Pharmaceutical Market by Therapeutic Category (1994).) These nations' aging population was also expected to provide a boost to the pharmaceutical market.

Professor Stefan Thomke, Research Associate Ashok Nimgade, M.D., and Paul Pospisil, Ph.D., prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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Being first to market with a new class of therapeutic agents was increasingly crucial for a product to be commercially successful, however. Quite often, the first three drugs introduced within a new product class would together control over 80% of the market. At the same time, the process of drug discovery, development, and clinical approval was extremely effort-intensive and expensive. Large pharmaceutical companies spent up to 15-20% of sales in R&D. In the United States, as part of an extensive, highly regulated safety approval process, each drug had to pass three phases of clinical trials under the scrutiny of the U.S. Food and Drug Administration (FDA): Phase I, which tested clinical safety, Phase II, which assessed drug efficacy, and Phase III, which tested adverse effects from long-term use (see Exhibit 2: **Summary of Drug Development in the USA**). For each successful product the sponsoring drug firm typically spent more than \$230 million, with the average time to market being 14.8 years¹—over twice as long as it took the US space program to get a man on the moon.

In addition, the time required for a pharmaceutical drug to be approved substantially decreased the effective term of its patent protection. Under current law, a patent's term expired 20 years from the time the patent application was filed. (Prior to 1995, patent protection extended 17 years after the patent was issued.) But even with whatever patent protection remained by the time a drug reached the market, seven out of 10 products failed to return on a company's investment. Fortunately for these firms, sales of only a few products could provide exceptional returns. In the mid 1990s, 14 products had annual sales over \$1 billion,² enabling profit margins of 15-20%. (See Exhibit 3: **Top 20 Prescription Drugs by Worldwide Sales (1994)**.)

Not surprisingly, because of long product development lead times and large marketing costs, combined with high risks, the pharmaceutical industry was dominated by large transnational companies, with the top 20 companies generating 47% of total sales.³ Most major players were U.S. or European multinational pharmaceutical firms such as Merck & Co., Bristol-Myers-Squibb, Glaxo, and Eli Lilly; each had annual sales revenues running in the billions of dollars and employed several thousand employees worldwide. (See Exhibit 4: **Top 20 Firms Active in the Pharmaceutical Industry (1994)**.)

Meanwhile, drug makers worldwide were facing increased public pressure to reduce prices of most pharmaceuticals. Whereas prior emphasis had been placed on drug safety and efficacy, cost became an additional important factor in the 1990s. In the United States, the rapid growth of managed care organizations and the implementation of cost-containment practices—including price controls, volume discounts, and substitution of cheaper generic products in hospital formularies—had greatly increased competitive pressures. Top pharmaceutical firms also faced substantial loss of dollar market share to generic products because of patent expirations. Within a few months of a drug going off patent, leading firms were often forced to slash prices by 80%.

Although pharmaceuticals accounted for only about a tenth of all health care costs in the United States and in many cases reduced need for more costly interventions like surgery, to consumers they represented a highly visible target. Pharmaceutical firms were often depicted as price-gougers, with retirees having to make substantial out-of-pocket payments for pills or AIDS patients spending thousands of dollars a year just for one drug. Given this environment, drug makers, in order to have their new, higher-priced products included in hospital formularies, had to demonstrate that these products would yield substantial therapeutic and cost benefits over existing

¹ FDA (1995), "From Test Tube to Patient: New Drug Development in the United States," *FDA Consumer*, Special Issue, January; J. DiMassi, R. Hansen, H. Grabowsky and L. Lasagna (1994), "Cost of Innovation in the Pharmaceutical Industry," *Journal of Health Economics*, vol. 10, pp. 107-142.

² "World Pharma Firm League," *Marketletter*, July 3, 1995.

³ Ibid.

ones. According to Martin Haslanger, Ph.D., executive director of Research Technology and president of Sphinx Pharmaceuticals, "The marketplace will only reward innovation. It is no longer rewarding to make incremental improvements."⁴

Drug makers confronted these market pressures in a variety of ways. At a strategic level, several firms responded by mergers that generated workforce reductions and other cost savings, while other firms invested heavily in, or acquired, innovative biotech companies in hopes of tapping new technologies. For all drug makers, speeding the drug development cycle became a priority—for every week's delay to market, millions of revenue might be lost. Moreover, since the R&D phase of product development was largely under the internal control of the individual company, it represented a powerful leverage point for controlling time and cost. Hence, in an attempt to shorten the drug development cycle, many pharmaceutical firms raced to incorporate emerging breakthrough technologies such as genetic engineering, combinatorial chemistry, and high-throughput screening.

Eli Lilly and Company

Eli Lilly and Company was founded in Indianapolis, Indiana in 1876 by Colonel Eli Lilly. A pharmaceutical chemist and Civil War veteran, Colonel Lilly was frustrated by the poor quality of medicines and "sideshow hucksterism" of his time. Over ensuing decades, his company went from a family-run firm to a global corporation: in the mid 1990s, Lilly, operating in 150 countries, was one of the world's largest pharmaceutical companies, with over 25,000 employees and 1994 sales of \$5.7 billion.

Through much of the twentieth century, Lilly was prominent in the traditional field of antibiotics. In the early 1980s, however, it made news by becoming the first marketer of a genetically engineered product when—through a collaboration with a biotechnology firm—it introduced human insulin. In the late 1980s, Lilly gained further public prominence by developing the innovative anti-depression drug fluoxetine (widely known by the brand name Prozac®).

By the 1990s, Lilly maintained major research divisions across a variety of treatment areas, including central nervous system disease, inflammatory disease, cardiovascular disease, cancer, and endocrinology (which dealt with hormonal diseases like diabetes and growth hormone deficiency). Its products ranged from the highly promising drug Zyprexa® for treating schizophrenia to Gemzar® for treating pancreatic cancer. For all its success, however, Lilly, like most other pharmaceutical firms, could not easily predict its next blockbuster. (See Exhibit 5: Eli Lilly and Company: 1994 Financial Highlights)

Nevertheless, Lilly had remained an industry leader through its 120-year history. By the early 1990s the company was expanding into allied businesses such as diagnostics and animal products. But it also faced high organizational costs and a dwindling product pipeline. An \$11 billion drop in company stock value, from March 1991 to June 1993, signaled a loss of confidence in Lilly's competitiveness.

In 1993, under a newly appointed CEO, R. L. Tobias, Lilly sold its medical device and diagnostics unit in order to focus on vertically integrating drug discovery, development, production, and distribution. The new management slashed Lilly's workforce by 10% and acquired several key businesses and technologies that strengthened the core pharmaceutical business. The company also planned to restructure its research efforts to refill the product pipeline. As a result of these steps as well as several promising new products, Lilly's stock price substantially rose. (See Exhibit 6: Eli Lilly and Company—Organization.)

⁴ K. Heine, "Sphinx Paves the Way to Discover," *Focus*, Eli Lilly, March 1995.

Innovations in the New Drug Development Process

Throughout history, drug discovery relied on the observations and experiments of naturalists and herbalists. Even in the 1990s, a fourth of all medical compounds, including aspirin and the widely used heart drug digitalis, derived originally from plant extracts.

Synthetic chemistry, whose roots lay in the nineteenth century, marked the first modern revolution in drug development. It made possible the development of compounds never before seen in nature, including more powerful and potent variations of naturally occurring compounds (such as the cephalosporin antibiotics that were variations of the naturally occurring penicillin). Synthetic chemistry also aided in the patenting of drugs and as such helped spawn the multinational drug industry.

Through much of the twentieth century, however, drug discovery remained a labor-intensive process relying on inspiration, hard work, and luck. Metaphorically, drugs were molecular-sized "keys" that had to fit "locks" or targets (called receptors); chemists were the locksmiths. Indeed, they were effectively blind, or at least semi-blind, locksmiths, for they had to make up thousands of different keys to find the one that matched. Doing so entailed synthesizing compounds, one at a time, which typically required seven to 10 days and \$5,000-\$10,000 per compound. For each drug reaching the market firms spent an average of 124 chemist-years on synthesizing starting compounds,⁵ a critical path activity. The time spent on synthesis represented a place of high leverage for speeding up the drug development cycle.

Newly synthesized molecular keys were tested by biologists, typically using animals that served as models for a disease (for example, a mouse with a neurological problem similar to Parkinsonism). Most compounds would show no activity or be too toxic for further evaluation. A few, however, might show promise, and chemists would modify these "lead compounds" until a good clinical candidate emerged. Typically, for each successful drug that made it to market, a firm began with an average of 10,000 starting compounds. Of these, only 1000 would make it to more extensive *in vitro* trials (i.e. outside living organisms in settings such as a test tube), of which 20 would be tested even more extensively *in vivo* (i.e. in the body of a living organism such as a mouse) before ten compounds made it to human clinical trials. The entire process represented a long and costly commitment, with the human trials closely monitored by the government.

The next major revolutions in drug development, *genetic engineering* and *rational drug discovery*, crystallized in the 1980s through a deeper understanding of biology—in particular, how drugs worked, and what receptors they targeted. Now drugs—Prozac being an early example—could be made by combining serendipity with working models of the human body.

With these revolutions, industry experts expected the R&D process to shift from a random screening approach toward a "rational" drug discovery process—a shift tantamount to replacing a shotgun with a viewfinder-equipped gun. Yet scientists still could not make accurate enough predictions about drug-receptor interactions, and drug discovery continued to remain a tedious, labor-intensive process, with hundreds or thousands of related compounds being generated and then examined. Although many drug firms had, over the decades, built "libraries" of hundreds of thousands of compounds, they had barely scratched the surface of the potential "molecular diversity" present on our planet.

Just as locksmiths could make thousands of differing keys based on just one template, so too could theoretical chemists envision creating hundreds of thousands or even millions of derivatives (or

⁵ R.G. Halliday, S.R. Walker, and C.E. Lumley, *Journal of Pharmaceutical Medicine*, 2 (1992): 139-154.

analogues) based around a relatively simple compound such as penicillin. Because of this staggering molecular diversity, drug makers tended to be uneasy, feeling that their particular drug on the market might by no means be the best, and that a rival firm would pluck out another, far better drug from the universe of related molecules—and it would eventually corner the market.

By the late 1980s, several biologists and chemists hoped that recent advances in synthetic chemistry, robotics, and information systems could tap this rich molecular diversity and allow for yet another major revolution in drug discovery: *combinatorial chemistry* (often shortened to “combichem”) and its allied branch, *high-throughput screening*.

Combinatorial chemistry enabled a large collection or “library” of related chemical compounds to be quickly generated simultaneously. Instead of one compound being made at a time, variations were created around the backbone of a basic molecular structure. With just a few building blocks chemists could create a large, diverse set of molecules just as locksmiths could make thousands of keys from one template using just a dozen different shaped cuts. (See **Exhibit 7: Principles of Combinatorial Chemistry**.) With the molecule serotonin, for example, up to several millions of related molecules could be generated—a staggering feat to accomplish manually.

The human body, in essence, was a master of combinatorial chemistry (and high-throughput screening), churning out over a trillion different antibodies (specialized proteins that help neutralize bacteria, toxins, or other invaders) by shuffling around different molecular components. In the laboratory, however, combinatorial chemistry presented a major difficulty: many processes involved in drug synthesis were not routine and required individual adjustments by skilled chemists. Likewise, the vital step of screening presented a major challenge. Potential drug molecules were traditionally tested or “screened” in live animals—a venture fraught with logistical difficulties, high expense, and considerable statistical variation. Using traditional screens, drug makers could hardly manage to sift through their own historical libraries of compounds, let alone the unprecedented volumes of compounds generated by combinatorial chemistry.

Given this slow pace of screening, scientists would often jump on early leads and become invested in them at the expense of other promising new leads. The challenge, therefore, was to develop test-tube-based screening methodologies amenable to automation. As Stephen Kaldor, a Lilly scientist, explained, “We needed a system that allowed us to evaluate and prioritize our leads simultaneously, rather than letting the clock decide which molecules we would work up.”⁶

High-throughput screening was aimed at solving this problem. Using this technology, high-speed robots would perform a series of biological tests or “assays” on all members of a chemical library virtually simultaneously. A simple biochemical response based on the fit between a potential drug and its receptor could be visualized simply—for instance through a color change—and thus could be used to pick out compounds that showed the desired activity.

Obviously, the greater the number of compounds generated through combinatorial chemistry, the greater the demand placed on screening. Thus, generating a library of millions of compounds could outstrip the capacity of a screen capable of processing only a thousand compounds a week. One popular strategy chemists experimented with to get around this dilemma was restricting combinatorial diversity to representatives from major families of a compound’s analogues. In essence, this was like examining major branches and sub-branches of a tree, rather than examining individual leaves.

For many traditional chemists in 1994, however, the larger issue centered around proving the merit of combinatorial chemistry. Although it looked promising in theory, it worked only for certain

⁶ K. Heine, “Sphinx Paves the Way to Discover,” *Focus*, Eli Lilly, March 1995.

groups of compounds. Moreover, no new drug candidates had been uncovered by this new and untried technique.

Combinatorial Chemistry at Lilly

The Technology Core group of the Research and Development Area of Lilly functioned as a separate division that supported the company's various research activities. In the early 1990s, this group recognized the potential promise of combinatorial chemistry and high-throughput screening and realized that other pharmaceutical firms were planning to acquire biotech firms with leading edge expertise in these areas.

Under direction of chemist Stephen Kaldor, PhD, Lilly started developing capabilities in combinatorial chemistry. Kaldor was charged with creating "libraries" or collections of compounds that could be then tested within the organization for therapeutic properties. In early March 1994, he gave a well-attended presentation on his team's work that helped disseminate knowledge of combinatorial chemistry through the organization.

In September 1994, as a vote of confidence in the new technology, Lilly acquired a financially strapped biotechnology firm named Sphinx Pharmaceuticals (of Durham-Research Triangle Park in North Carolina, and Cambridge, Massachusetts), which had leading expertise in combinatorial chemistry and high-throughput screening and boasted experts such as its vice president of research Michael Pavia, PhD. But it would be another year or more before Sphinx's capabilities could be integrated into Lilly's drug discovery division. At the same time, Kaldor's group made some remarkable progress. Normally, a Lilly chemist was able to synthesize one compound per week, and Lilly had a screening capacity of 50 compounds per week. By the end of 1994, Kaldor's group, using combinatorial chemistry and high-throughput screening, increased the capacity to screen compounds for biological activity around eight-fold, and the capacity to synthesize new compounds by a factor of 120.

Drug Discovery for Central Nervous System (CNS) Diseases

In the mid-1990s, roughly one billion people, or one-fifth of the world's people, suffered from a neurological or psychiatric disorder at one point in their lifetime. World Bank estimates revealed that central nervous system (CNS) diseases accounted for roughly 10% of all lifetime years lost to disease. Even "less severe" psychiatric conditions—for instance, clinical depression, severe insomnia (sleeplessness), and migraine, each of which affected over 10% of the population—could take a severe toll on society. For instance, depression might predispose people to suicide, a point poignantly illustrated by the demise of the wife of Lilly CEO Randall Tobias. Because of similar tragedies, according to Tobias in a sobering journal interview,⁷ "we're spending over \$1 billion a year in research and development. We don't know all the answers—and we need to keep going."

Fortunately, modern medications had the potential to boost quality of life so dramatically that patients might end up taking medications regularly for years, with, for example, a depressive patient spending up to \$25 a week for a daily Prozac regimen. This, of course, was a boon for drug makers in the small but growing CNS market, which had 1994 worldwide sales of \$11.1 billion (80% originating in G7 nations).

Many CNS diseases were thought to result from imbalances of neurochemical agents (neurotransmitters) that transmitted signals between nerves. The number of active neurotransmitters

⁷ "Lilly Rides a Mood Elevator," *Business Week*, November 11, 1996, p. 63.

normally present at any time was intricately controlled by biochemical mechanisms for production, storage, release, and rapid degradation of these agents. Scientists postulated that biochemical "machinery" dysfunctions leading to altered concentrations of certain neurotransmitters led to conditions ranging from panic disorder to obsessive compulsive disorder to depression.

Different neurotransmitters were known to activate different receptors just as different keys might open up different doorways. (See Exhibit 8: Receptors and Neurotransmitters.) Not surprisingly, various classes of neurotransmitters, such as dopamine, norepinephrine, and serotonin, were associated with differing diseases. Serotonin, for example, was associated with a variety of conditions ranging from depression to insomnia to aggression to migraine. Its wide-ranging effects in the body were a consequence of at least a dozen known types of receptors (molecular "locks") in locations as varied as the digestive system and the nervous system where serotonin could act.

The serotonin family of molecules and receptors in the nervous system would play a large role in the fortunes of Lilly. Lilly's first billion dollar blockbuster anti-depressant drug, Prozac, launched in 1988, very *selectively* boosted levels of serotonin to exert its therapeutic effects. Prior anti-depressants, in contrast, had undesirable side-effects such as sedation, anxiety, and dry mouth because they non-selectively increased levels of several different neurotransmitters in addition to serotonin.

Prozac grew to become the world's fifth best-selling drug in 1994, its sales accounting for over a fourth of Lilly's revenues. (See Exhibits 3 and 5.) Leveraging on this success, Lilly's CNS research division grew to roughly a third of all company research efforts. The aggressive emergence of other direct competitors to Prozac, which itself would come off patent in 2003, lent urgency to Lilly's CNS projects. Even if Lilly could not produce another blockbuster such as Prozac, it needed other solid hits.

Lilly turned once more to serotonin.

Lilly's Migraine Project

I cannot describe the pain because it was so severe, but you might imagine how it would feel if someone hammered a sharp nail into your eye and out your temple. The pain affected the entire side of my head, even causing me to vomit. To curb the pain, my doctor gave me an injection which only put me to sleep.

—Description of a migraine sufferer⁸

"Migraine," a French word derived from the Greek *hemicrania*, referred to pain involving half the head at a time. Migraine afflicted 12% of the population, with a 3:1 preponderance in women; it was characterized by unilateral pulsating headaches often severe enough to restrict physical and mental activity. Historians of medicine speculated that visual disturbances experienced during migraines inspired Charles Dodgson (writing under the pseudonym Lewis Carroll) to describe various physical distortions his heroine Alice experienced in Wonderland.⁹

Traditional migraine therapies ranged from compresses to biofeedback to narcotic painkillers to tranquilizers. Some therapies dated back centuries: ancient Egyptians employed tight compresses

⁸ <http://www.painclinic.com/treatment.htm>, 1996.

⁹ L.A. Rolak, "Literary Neurologic Syndromes: The Alice in Wonderland Syndrome," *Archives of Neurology*, 46 (1992): 353.

around the scalp. Most therapeutic efforts focused on a theory, dating to the 1930s, that dilation of blood vessels in the lining of the brain caused migraine. It was only in the 1980s that scientists suspected that nerve inflammation involving the neurotransmitter serotonin played a role. By the early 1990s, two classes of therapies existed: those directed at prophylaxis (with expected 1996 worldwide sales of \$200 million) and therapeutics directed at treating acute attacks (with expected 1996 worldwide sales of \$1.5 billion).

Lilly scientists hoped to capitalize on their expertise in serotonin research to find a drug for acute attacks of migraine. The stakes were high. The only recent drug on the market targeted specifically at migraine was Glaxo-Wellcome's sumatriptan (Imitrex®). Imitrex, launched in 1992, was a mildly effective drug that acted by constricting blood vessels; it also had an adverse effect on the heart's vessels, thereby limiting its use in many patients. In addition, the effects of Imitrex were very short-lived for most patients. Yet Imitrex enjoyed almost 75% of the acute migraine market, with projected 1996 annual sales of \$800 million (up from \$250 million in 1993).

Many scientists, including those at Lilly, felt that the makers of Imitrex had followed the wrong path by trying to find a compound that constricted blood vessels (known as "vasoconstriction"). While Imitrex was believed to constrict blood vessels by mimicking serotonin, it affected a number of different serotonin subtypes, including the serotonin "1d" receptor. Several drug makers raced to develop therapies that targeted the "1d" subclass of serotonin receptors.

Lilly researchers, however, were not convinced that, of the variety of serotonin subtypes Imitrex was known to affect, the "1d" receptor was involved in its antimigraine activity. By 1991, Synaptic Pharmaceutical Corporation (Paramus, New Jersey), Lilly's collaborator, had found (cloned) a new serotonin receptor subtype, the serotonin "1f" receptor. Synaptic's scientists also demonstrated that Imitrex had affinity for the "1f" receptor. Lilly and Synaptic scientists theorized that it was the serotonin "1f" receptor which was specifically involved in migraine. In effect, they potentially held the biochemical anti-migraine lock (receptor) and now needed to find the right key.

This was no small task, for chemists could envision well over a million different variations of serotonin, any of which could prove the right key. The logical place to start looking, however, was in the 1,000 or so serotonin-like compounds in Lilly's extensive decades-old collection of 250,000 compounds.

From 1991 to early 1994, spearheaded by senior chemists John Schaus, PhD, and James Audia, PhD, along with scientists David Nelson, PhD, and Lee Phebus, PhD, in Lilly's "Serotonin Working Group," researchers started out screening a few serotonin-like compounds weekly but later screened up to 20-30 compounds per week from Lilly's serotonin collection.¹⁰ By March 1994, out of over 1,000 previously synthesized serotonin-like compounds one particularly good "lead" had been found. In addition, Lilly's experiments in which lab animals were administered these lead compounds showed further promise of the "1f" serotonin receptors as treatment targets for migraine without the need for inducing vasoconstriction.

But the work was not over yet. Schaus explained this "lead identification" stage of drug discovery:

In order to find a molecule that interacts with the target, you need to look in a systematic, iterative way. Some analogue of the initial, starting "key" will work,

¹⁰ This could be considered a "medium-throughput screen," and it contrasted favorably with technology available at the time of discovery of Prozac, when only one compound could be screened per week in a screening process involving crude rat brain extracts.

but is not likely to be potent or a good compound . . . at least it is a good starting point.

Using traditional methods of creating derivatives, researchers found a better compound, named LY329511. In the iterative process of drug discovery, this now became the current lead, against which further drug candidates would have to be tested. According to Schaus, LY329511 was:

More than satisfactory with good affinity [for the receptor], activity, moderate selectivity [i.e., activity for that receptor alone], and oral activity, with moderate duration of effect. . . There was a lot of excitement about taking it into clinicals. But we didn't know much about toxicology, and we hadn't explored other chemical modifications. We wanted to make another 100 derivatives—this might realistically take up to a year.

Combinatorial Chemistry and Lilly's Migraine Project

Fortunately, Schaus recalled fellow Lilly chemist Stephen Kaldor's March seminar on combinatorial chemistry. Both had obtained their chemistry PhDs at Harvard, but at different times. Schaus, senior to Kaldor by several years, had originally attended the seminar because "Stephen is very bright. You want to follow what he's doing because it's sure to be interesting." Although Lilly's expertise in combinatorial chemistry still lagged behind that of specialized biotech firms, it was Kaldor whom he telephoned to say:

I greatly enjoyed your presentation and feel it may pertain to one of our serotonin projects. We are under time pressure to get an anti-migraine compound into clinical trials and, fortunately, already have a good "hit." We have started to generate analogues of this lead compound but I am intrigued about using combinatorial chemistry to explore other leads. The last thing I want to do, however, is go down a path not well thought out and which will need a lot of fixing later on.

In mid-summer 1994, Schaus and Kaldor sat in the "Contemplative Garden" in the central courtyard of a large research building, an area where scientists often gathered for informal meetings, and discussed how they might collaborate. "I was delighted that John [Schaus] was willing to try our new technology for punching out analogues for his leads," Kaldor explained later. "But we were still working out bugs in our system; we were still interfacing extensive instrumentation and robotics with reproducible small-scale chemistry." The extent to which they should use combinatorial chemistry versus traditional chemistry to create new derivatives was difficult to decide. As an initial pilot effort, however, Kaldor agreed to make some 30-40 compounds, study the results, modify the search to make another 30-40 compounds, and continue in this iterative fashion. Traditional chemistry would be used at critical points.

The assay results on the first set of compounds showed that efforts should be focused on one subclass of derivatives. It was in the second batch of combichem compounds that they knew they had made a significant finding. A number of compounds showed significantly higher potency than LY329511. Detailed testing of these new compounds demonstrated that one of them, LY334370, was an improvement over LY329511. Importantly, it lacked the vasoconstricting adverse effects seen in the previous compound.

The company's philosophy of R&D management supported this ad hoc collaboration. As explained by Jim White, Ph.D., director of Neural Science Research, "There's a lot of serendipity in science. We can't lead science. Historically, Lilly doesn't hire chemists to fill jobs. We left an open playing field in which Kaldor felt empowered to think." Lilly had created an R&D environment that attracted scientists from top universities; several Lilly scientists had studied under Nobel laureates.

But as word of this unusual collaboration spread through the company, even support from other superiors such as Ben Laguzza, PhD, director of Neuroscience Chemistry Research, and Richard DiMarchi, PhD, vice president of Endocrinology, could not shield the two scientists from criticism. According to Bill Heath, director of Target Validation and Screen Enablement:

Schaus came under heavy criticism. People felt he was engaging in "voodoo science," and that the collaboration would divert valuable screening capacity. Schaus and Kaldor were gutsy, taking a big gamble. Even the concept of high-throughput screening was met with skepticism. Few at Lilly believed we could collapse three years of screening into three months or even less. It's very easy to stop something you don't believe in.

"Traditional chemists saw combinatorial chemistry as a threat to their jobs," according to Laguzza. Although going from traditional to combinatorial chemistry might be crudely likened to going from handcrafting to a production line, Kaldor noted that:

Combinatorial chemistry does not replace the wisdom or experience of conventional chemists. The tension centers around, instead, in how much we "subjugate" traditional medicinal chemistry to have it supply us intermediates . . . much glory, after all, comes from the final product.

September 1994 witnessed indirect support for combinatorial chemistry in the form of Lilly's acquisition of Sphinx. Unfortunately, Sphinx's capabilities would not be able to be tapped for the migraine project since up to a year would be required to integrate its capabilities. (The two companies employed differing protocols for preparing materials for the screening process.)

The same month, however, also witnessed a broadside to the Kaldor-Schaus collaboration during a seminar Schaus presented on his research. The data on identifying potential antimigraine serotonin compounds were well received until Schaus showed work involving combinatorial chemistry. Since combinatorial chemistry-generated compounds were only 80-90% pure (as opposed to almost 100% purity for conventional syntheses), several audience members questioned the scientific value of the combinatorial chemistry data. Could promising signs of activity in some of the combinatorial chemistry-generated compounds, after all, be simply due to impurities?

Fortunately, Schaus could present favorable comparisons of studies with the same compounds synthesized via both traditional and combinatorial approaches. But this did not spare him from further criticism along purely logistical lines. Some argued he distracted the team's main efforts by testing an unproved technology. Others felt these experiments overloaded the company's biological screening assay, which was geared only for volumes generated by traditional approaches. But Schaus argued that "the benefits over the longer term of being able to synthesize many more compounds at once would far outweigh the extra time and effort over the short term."

As Lilly scientists drew battle lines over combinatorial chemistry, Lilly managers prepared to debate decision choices in bringing an anti-migraine compound to clinical trials.

Difficult Choices: The Project Team Advisory Committee (PTAC) Meeting

Migraine Project Manager Bianca Sharma, who held an MBA as well as an advanced degree in biochemistry, looked forward with anticipation to the PTAC (pronounced "pee-tack") meeting, which would be dedicated primarily to the migraine project. The committee typically met for several hours each month and recommended whether (or how) compounds should go into clinical trials. The PTAC comprised some 20 high level scientists and managers, including the president and VPs of Lilly

Research Laboratories. Projects were voted on through an anonymous electronic scoring system, with the chairman, Dr. Douglas Morton, responsible for breaking deadlocks.

From the research scientist's viewpoint, the PTAC served primarily as a senior scientific peer review. For each project, it reviewed issues of safety as ascertained from animal studies, basic biology, and preclinical pharmacology (did the drug seem efficacious in animal models?) and chemistry (given constraints of time and money, had the company adequately surveyed all leads to field the best clinical candidate?). From the corporate strategist's viewpoint, however, PTAC also assessed market opportunities.

Representing the CNS business unit, Sharma's task was to present business recommendations on drug development options for the migraine project. Preparing for PTAC meetings, she had found, was an interdisciplinary effort that helped clarify issues of resource requirements and allocations. Sharma now mentally rehearsed what she felt were the three key business issues for her PTAC presentation:

Issue 1: Time to market. In reviewing her spreadsheet model of market projections based on data from Marketing (see Exhibit 9: *Memo—Migraine Marketing Analysis*), Sharma realized that each month's delay to market would result not only in revenue losses, but also in opportunity cost from allowing prior serotonin-based entrants to consolidate their grasp on the market. Although time to market was of essence, it appeared that Lilly would most likely be the fourth or fifth serotonin-like compound to reach the market. But it would be the first serotonin 1f-based compound. For this reason, some strategists argued, it was critical to take the time required to field the best possible compound. But how much of a delay was tolerable?

Sharma recalled a discussion with senior corporate strategist Amy Velasquez who commented on the new competitive challenges: "In the old days we could hold back our lead compound. Not now; today's market is more competitive and calls for 'hustle.'" Velasquez added, "If we had a backup, we could put it on hold until we see anything that creates a hitch. Then the backup could be turned on quickly." Unfortunately, no back-up existed now.

On the other hand, Martin Haslanger had made a theoretical argument for holding back:

Sometimes it's almost better to be number two—a second fast-follower. The list of the top 100-200 best-selling drugs includes many good fast followers. The chances of getting to market in first place can be near zero because of the long series of low probability steps involved in product development. For example, with Prozac, we went through some mine fields to get to the market first. We almost did not make it at many points. Then, when we faced rough patches, our competitors were able to play up their products, to our detriment.

Issue 2: Diversity of leads. The second issue was intimately linked to the first. If Lilly were competing with unlimited time and resources on its side, it could take several similar leads simultaneously through the astronomically expensive clinical trials. But as Amy Velasquez had pointed out, "It is hard to justify two similar compounds racing down the track! The support infrastructure is enormous." Even if one lead were held back in favor of another, Haslanger noted certain intangible costs because, "the following group will lose a sense of urgency." Like other drug makers, therefore, Lilly simply had to send the best available compound candidate through the maze of clinical trials. And candidate LY334370, as Sharma recalled, was a significant improvement over the already promising LY329511.

Thus, diversity of leads was extremely important but would have to be explored earlier in the drug discovery process. Combinatorial chemistry could make its biggest impact here. Exploring further molecular diversity would also help broaden patent claims.

Issue 3: Traditional or combinatorial chemistry? Combinatorial chemistry promised to dramatically boost the ability to create, and thus explore, related compounds. A Lilly chemist could now create orders of magnitude more compounds in a given time period. Yet many Lilly scientists viewed the new technology with considerable mistrust, as it still had many unresolved problems and had never before been used to get a compound to clinical trials.

With the above issues in mind, Sharma next reviewed predictions various corporate experts had made about the impact of combinatorial chemistry on clinical trial outcomes (see **Exhibit 10: Expert Estimates**.) In September 1994, she had polled six experts within the firm for their estimates about how combichem could affect chances of getting a drug candidate through clinical trials. At the same time, she asked them how these chances might impact time-to-market. Two of the experts she polled, Drs. John Lee and Edward Pan, were senior scientists working closely with the incipient Kaldor-Schaus collaboration; another two, Drs. Beverly Bourell and John Wecker, were traditional chemists who had extensive experience with serotonin-based drugs and had raised their concerns in Schaus' presentation on his work with Kaldor. The final two were senior managers with scientific training—Dr. Clare Pimentel, a senior product manager from the Prozac program, and Ashley Peck, director of corporate marketing, who had worked closely with Lilly's R&D group for over 25 years. Sharma hoped that she could use the expert poll as an input to her projections but felt uneasy about the level of disagreement between the six experts on various development options.

Then Sharma looked at her watch: the PTAC meeting was just two hours away.

Exhibit 1 U.S. Pharmaceutical Market by Therapeutic Category (1994)

Drug Category	1994 (US\$ billions)	2000 Estimates (US\$ billions)	% Change of Market Share
Cardiology	15.4 (18%)	13.1 (13%)	(27)
Antibiotics	12.0 (14%)	8.1 (8%)	(42)
Gastrointestinal	11.1 (13%)	10.1 (10%)	(23)
Central Nervous System	6.8 (8%)	13.1 (13%)	62
Respiratory	5.1 (6%)	8.1 (8%)	33
Lipid Lowering	4.3 (5%)	5.0 (5%)	0
Cancer	4.3 (5%)	7.1 (7%)	40
Diabetes	3.4 (4%)	4.0 (4%)	0
Arthritis	3.4 (4%)	2.0 (2%)	(50)
Hematology	3.4 (4%)	7.1 (7%)	75
Imaging	2.6 (3%)	2.0 (2%)	(50)
Anti-viral	2.6 (2%)	3.0 (3%)	100
Thrombotics	2.6 (2%)	2.0 (2%)	0
Immunology	.86 (1%)	2.0 (2%)	100
Osteoporosis	.86 (1%)	4.0 (4%)	300
<i>Other</i>	8.6 (10%)	10.1 (10%)	0
TOTAL	\$85.6 billion (100%)	\$100.9 billion (100%)	

Source: Lehman Brothers Pharmaceutical Research, 1996.

Exhibit 2 Summary of Drug Development in the USA¹¹

New drug development in the early 1990s was a costly affair with high failure rates. For each therapeutic drug entering the market, pharmaceutical firms invested more than \$230 million (estimates go up to \$359 million) and 14.8 years (up from 4.3 years in the 1970s). Estimated costs include out-of-pocket expenses, costs of failed projects, and opportunity costs. A brief outline of the drug development process follows:

Basic Research (About 2 years) This phase typically started through the initial screening of plants, microorganisms, and other naturally occurring substances to find a "hit" or "lead" compound. In a painstaking iterative process, organic chemists would then make analogues or modifications of existing leads. Although this stage typically cost a firm \$30-50 million, it represented a point of great leverage for speeding up a firm's drug development process. Only 40 out of an initial 10,000 compounds might make it to the next stage of pre-clinical testing.

Pre-Clinical (Biological) Screening (About 3 years) Pre-clinical trials, which often overlapped the basic research phase, involved animal testing to assess drug safety and to gather data on biological effects (e.g., absorption, metabolism, and excretion). Only one in four drugs typically made it through this phase to enter human clinical testing as "Investigational New Drugs" (INDs).

Human Clinical Trials (About 6 years) Investigational New Drugs faced the FDA's regulatory hurdles, the most stringent and time-consuming approval process for therapeutic drugs in the world. Total costs for conducting clinical trials topped \$200 million, but with increasing proportions of this cost occurring with each of the three successive phases describe below.

Phase I Safety Trials (1 year): In Phase I trials, researchers determined highest tolerated doses, toxicities, and safe ranges in one or two dozen healthy volunteers. This phase also yielded invaluable information on absorption, metabolism, and excretion of the drug in humans.

Phase II Efficacy Trials (2 years): Phase II tested efficacy of drug candidates in up to several hundred volunteer patients based at test sites composed of participating hospitals. To ensure statistically relevant data, from this point onward, a portion of the volunteers received the drug while the others received placebos. Roughly one-third of all drug candidates survived Phases I and II.

Phase III Long-Term Efficacy Trials (3 years): In the longest and most expensive phase of drug testing, researchers monitored drug use in thousands of volunteer patients for long term safety, optimum dosage levels, and subtler adverse effects. Only about a fourth of all drug candidates survived Phases I, II, and III, and moved on to the FDA review stage.

FDA Review (About 2-3 years) Despite a trend toward computer-assisted applications, the hundreds of thousands of pages submitted in the New Drug Application (NDA) to the FDA represented a tribute to the pharmaceutical industry's data-generating capacity. The NDA included data on each patient, as well as on the company's plans for producing and stocking the drug. The FDA committee took up to three years to review the NDA. Even after approval, however, post-marketing surveillance by the FDA continued. Only one-tenth of all drug candidates entering clinical trials ultimately reached the market.

¹¹ Sources for this section: J.A. DiMasi (1995), "New Drug Development: Cost, Risk, and Complexity," *Drug Information Journal*, May; FDA (1995), "From Test Tube to Patient: New Drug Development in the United States," *FDA Consumer*, Special Issue, January; Kenneth I. Kaitin, and Huub Houben (1995), "Worthwhile Persistence: The Process of New Drug Development," *Odyssey, The Glaxo-Wellcome Journal of Innovation in Healthcare*, June.

Exhibit 3 Top 20 Prescription Drugs by Worldwide Sales (1994) (dollars in millions)

Rank 1994	Rank 1993	Product Name	Product Type	Marketer	World Sales	% Change from 1993	U.S. Sales
1	1	Zantac	Ulcer therapy	Glaxo-Wellcome	\$3,663	12	\$2,280
2	2	Vasotec/Renitec	Hypertension treatment	Merck	2,185	6	975
3	4	Prilosec/Losec	Ulcer therapy	Astra & Merck	1,904	40	850
4	10	Zovirax	Herpes therapy	Glaxo-Wellcome	1,729	49	444
5	6	Prozac	Antidepressant	Eli Lilly	1,665	38	1,180
6	3	Capoten	Hypertension treatment	Bristol-Myers Squibb	1,500	2	581
7	5	Mevacor	Cholesterol reducer	Merck	1,345	3	1,115
8	8	Adalat line	Hypertension/Angina	Bayer	1,300	8	120
9	9	Cipro/Ciproxin	Anti-infective	Bayer	1,300	8	712
10	16	Zocor	Cholesterol reducer	Merck	1,255	39	400
11	11	Voltaren	Anti-arthritis	Ciba	1,192	5	269
12	7	Procardia line	Hypertension/Angina	Pfizer	1,177	(3)	1,177
13	12	Augmentin	Anti-infective	SmithKline Beecham	1,126	(3)	491
14	17	Sandimmune	Immunosuppressive	Sandoz	1,038	7	500
15	14	Cardizem line	Hypertension/Angina	Hoechst Marion	933	2	812
16	18	Rocephin	Anti-infective	Hoffman-La Roche	930	4	413
17	20	Premarin	Estrogen replacement	Wyeth-Ayerst	853	14	723
18	23	Neupogen	Bioresponse modifier	Amgen	829	15	617
19	22	Pepcid/Pepcidine	Ulcer therapy	Merck	820	12	625
20	15	Ceclor	Anti-infective	Eli Lilly	\$812	(11)	394

Source: Derived from: "Top 100 drugs," *PharmaBusiness*, July 1995, p. 16; and "World Pharma Firm League," *Marketletter*, July 3, 1995.

Exhibit 4 Top 20 Firms Active in the Pharmaceutical Industry (1994) (dollars in millions, unless noted otherwise)

Company ^a	Total Sales	R&D Expense	EBIT	Net Income	Return on Equity (%)	Return on Assets (%)	Employees (000s)
(1) Bayer, A.G.	\$28,023	\$2,050	\$2,430	\$1,271	11.9%	4.7%	146.7
(2) Ciba-Geigy	16,171	1,578	2,232	1,403	12.0	6.1	84.0
(3) Johnson & Johnson	15,734	1,278	2,867	2,006	28.2	12.8	81.5
(4) Merck & Co.	14,970	1,231	4,633	2,997	26.9	13.7	47.5
(5) Bristol-Myers Squibb	11,984	1,108	2,638	1,842	32.3	14.3	47.7
(6) Sandoz	11,639	1,199	NA	1,272	20.7	8.9	60.3
(7) Hoffman-La Roche	10,816	1,710	3,110	2,098	17.0	8.6	61.4
(8) SmithKline Beecham Plc	9,933	976	1,213	110	12.4	0.9	55.4
(9) Abbott Laboratories	9,156	964	2,228	1,517	37.5	17.8	49.5
(10) American Home Products Corp.	8,966	817	2,145	1,528	35.9	7.1	74.0
(11) Glaxo	8,484	1,287	2,826	1,955	25.2	16.1	47.4
(12) Pfizer Inc.	8,281	1,139	2,003	1,298	30.0	11.7	40.8
(13) Hoechst Celanese Corp.	7,794	313	(55)	186	5.9	2.3	29.2
(14) Takeda Chemical Industries	7,778	677	1,124	518	7.7	4.5	11.0
(15) Eli Lilly and Company	5,712	897	1,828	1,286	22.1	8.2	24.9
(16) Sankyo Co. Ltd.	5,575	477	887	395	11.3	5.8	NA
(17) Schering-Plough	4,657	620	1,281	922	58.6	21.3	21.2
(18) Rhone-Poulenc Rorer	4,175	611	547	341	21.0	7.6	22.1
(19) Wellcome Plc—ADS	3,096	542	1,098	632	22.1	14.4	17.6
(20) Marion Merrell Dow Inc	\$3,060	\$462	\$632	\$438	20.5%	10.6%	9.4

Source: Standard & Poor's; Compustat, Global Vantage

^aSome firms have substantial business activity outside pharmaceuticals which is included in these figures.

NA = not available.

Exhibit 5 Eli Lilly and Company—1994 Financial Highlights (dollars in millions, except per-share data)

	1994	1993	% Change
Net sales	\$5,712	\$5,199	10%
R&D expenses	839	755	11
Income from continuing operations	1,185	465	155
Net income	1,286	480	168
Earnings per share			
Income from continuing operations	4.10	1.58	159
Net income	4.45	1.63	173
As adjusted ^a			
Net income	1,398	1,336	5
Net income per share	4.84	4.54	7
Dividends paid per share	2.5	2.42	3
Capital expenditures	577	634	(9%)
Income from continuing operations as a percent of shares	20.7%	8.9%	
Return on assets	11.8%	5.2%	
Return on shareholders' equity	25.9%	10.2%	

Source: Eli Lilly and Company

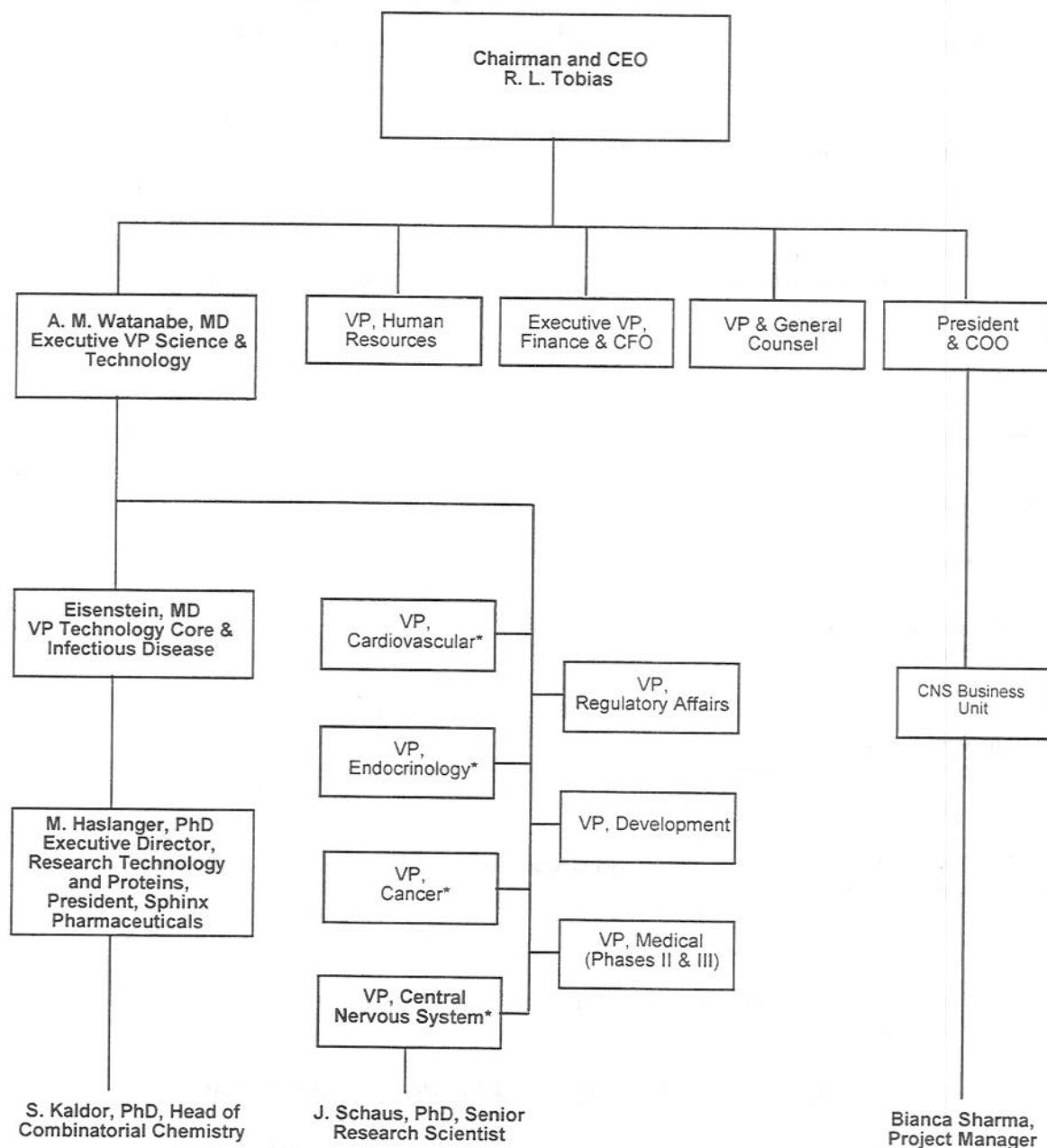
^aFor 1994, reflects the result of operations without the impact of acquisitions (including Sphinx) and produce recall. For 1993, reflects results of operations without impact of restructuring.

Eli Lilly and Company—Major Product Sales (dollars in millions)

Drug	Category	1994 Sales	% of Total Lilly sales	Launch Year
Prozac	Antidepressant	\$1,665	29%	1988
Ceclor	Antibiotic	812	14	1979
Humulin	Diabetes	665	12	1980
Axid	Gastrointestinal	487	9	1988
Vancocin	Antibiotic	249	4	1958
Humatrope	Growth Hormone	226	4	1987
Keflex	Antibiotic	140	2	1971
Lorabid	Antibiotic	\$129	2%	1992

Source: Eli Lilly and Company

Exhibit 6 Eli Lilly and Company—Organization



* Responsible for R&D and Phase I

Exhibit 7 Principles of Combinatorial Chemistry

Combinatorial chemistry is an emerging technology for generating a large collection or "library" of related chemical compounds rapidly, instead of having to make one compound at a time. This allows for creating variations around the backbone of a basic molecular structure. With just a few building blocks chemists can create a large, diverse set of molecules just as locksmiths can create thousands of keys from one template using just a dozen different shaped cuts.

Two major combinatorial chemistry systems—"split-and-mix" and "parallel synthesis"—came into wide usage. In split-and-mix synthesis, illustrated below, chemists synthesize compounds on surfaces of small beads. In each successive step, different beads are recombined and partitioned into different vessels. To each vessel, the next building block is added, and the process continues until the desired number of compounds has been created. Sensitive detection techniques can take advantage of small built-in differences between the starting beads to fish out the more promising combinations.

In parallel synthesis, different compounds are synthesized in separate vessels arrayed into columns and rows. No remixing of compounds occurs. Although this method yields fewer compounds, it yields higher purity of compounds.

Combinatorial Chemistry (the "Split-and-Mix" Method)¹²

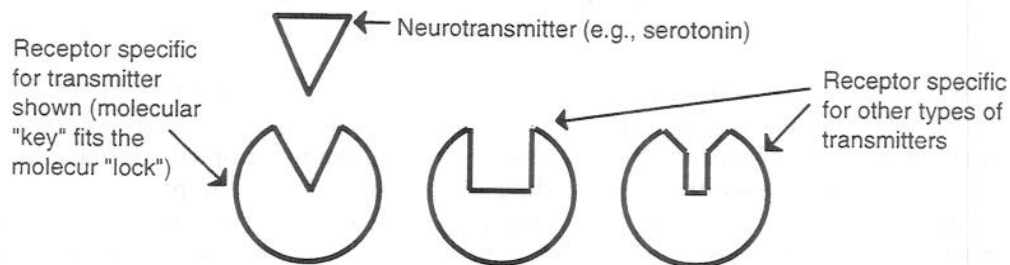
Round	Vessel 1	Vessel 2	Vessel 3	Number of Compounds
1	A	B	C	3 ($= 3^1$)
2	AD, BD, CD	AE, BE, CE	AF, BF, CF	9 ($= 3^2$)
3	ADG, BDG, CDG AEG, BEG, CEG AFG, BFG, CFG	ADH, BDH, CDH AEH, BEH, CEH AFH, BFH, CFH	ADI, BDI, CDI AEI, BEI, CEI AFI, BFI, CFI	27 ($= 3^3$)
...	...	...	...	...
K	...	...	...	($= 3^K$)

The "split-and mix" method works as follows (see table above): in Round 1, different polymer beads are reacted with compound A in vessel 1, B in vessel 2, and C in vessel 3. These beads are then mixed together and then split into three vessels. In Round 2, building block D is added to Vessel 1, E to Vessel 2, and F to Vessel 3. Once more, these compounds are mixed and split again. In Round 3, building block G is added to Vessel 1, H to Vessel 2, and I to Vessel 3. Note that newly added building blocks are bolded. With each consecutive round, the number of compounds increases by a factor of 3.

¹² S. Thomke, E. von Hippel and R. Franke, "Modes of Experimentation: An Innovation Process—and Competitive—Variable," *Research Policy* 27 (1998).

Exhibit 8 Receptors and Neurotransmitters (Simplified Illustration)

(A) Receptors ("Locks") and Neurotransmitters



(B) Transmitting Messages via Neurotransmitters

Neurotransmitters released from one nerve cell are recognized by certain receptors located on the surface of another nerve cell, which, in turn, may respond appropriately.

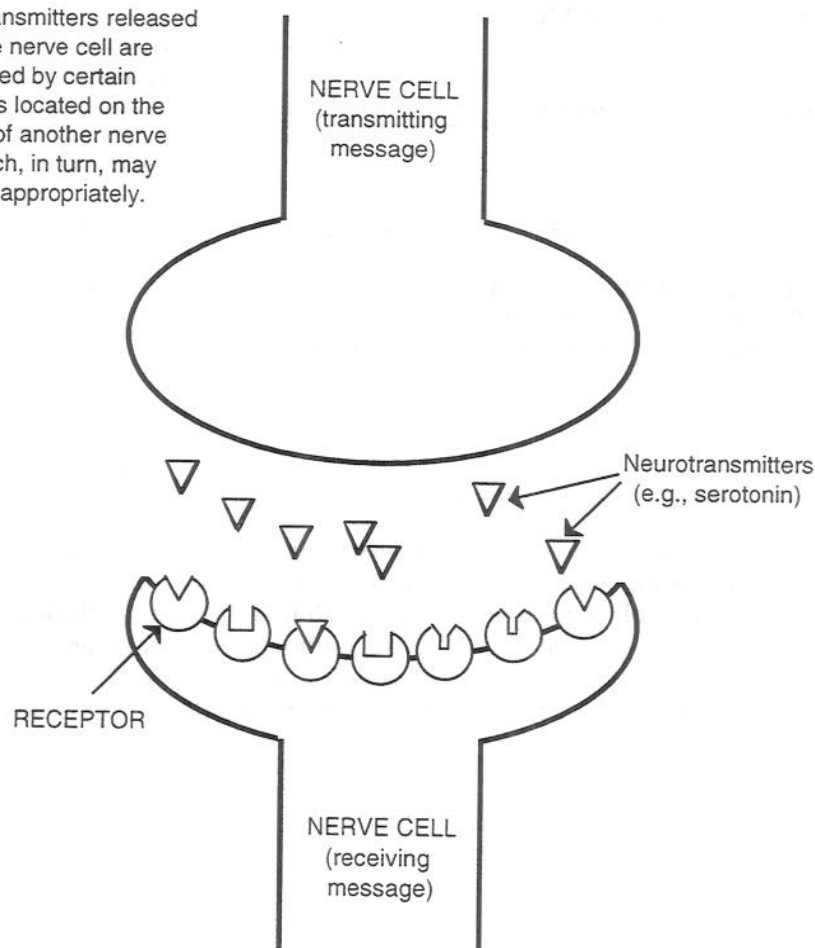


Exhibit 9 Memo—Migraine Marketing Analysis

MEMORANDUM

ATTN: Bianca Sharma, Migraine Project Manager

FROM: Anh Thieu, Marketing

DATE: June 17, 1994

Here is some information excerpted from our marketing report on our migraine project:

Baseline projection: Based on current market data as well as prior experience, our projection is that our serotonin 1f-based compound will hit the market in 2001, and gradually build up market share by 2005 to its peak \$300-500 million annual sales. (This is assuming that our product is indeed seen as more efficacious than 1d-based compounds.) Our models indicate that our drug could expect to remain at its peak levels for roughly another three years until competition would slowly erode market share to a negligible amount about two years before its patent expiration in 2012. (We discount revenue streams at 13% per annum.) Below are sundry items that went into our projection models:

- On average, each migraineur experiences 10-12 attacks per year, with mean duration of 9-24 hours. The frequency of attacks is greatest in the age group of 35-45 years. Only 55% of migraineurs sought medical treatment, and of these, only half were correctly identified as migraine. Thus, we feel that patient-education and physician-education could considerably expand the market for migraine. In fact, based on Gallup polls, perhaps about 40% of non-consulters could be motivated to seek treatment. In this case, pharmaceutical firms can perhaps increase the total market size for new (serotonin-based) therapies by 3-4 times into a \$3-4 billion market.
- Currently, two classes of migraine therapies exist: those directed at prophylaxis (which have expected 1996 worldwide sales of \$200 million) and therapeutics directed at treating acute attacks (expected 1996 worldwide sales of \$1.5 billion).
- Annual sales of our competitor Sumatriptan (Glaxo's Imitrex) since 1992 launch. (Note that only 10% of migraineurs are treated by sumatriptan)

Year	Sales (\$ millions)	Sales Growth (%)
1992	100	--
1993	250	175
1994	400	60
1995	525	40 (projected)
1996	800	50 (projected)

- In terms of migraineur preferences, 70% felt avoidance of cardiovascular adverse effects (such as those associated with sumatriptan) were important. Only 28% felt reduction in cost compared to sumatriptan was important.

With best regards, Anh

P.S. I am also including below some information on our marketing experience with Prozac, in case you find it interesting.

Market Experience of Prozac—Market Share (percent)

Year	Prozac	Zoloft	Paxil	Desyrel	Pamelor
1990	22.6%	—	—	3.0%	8.3%
1991	18.9	—	—	2.5	9.6
1992	16.4	5.3	—	1.7	7.2
1993	14.7	10.0	4.3	1.1	2.3
1994	16.7%	11.6%	7.4%	0.8%	1.1%

Source: J.R. Brinemeyer, et al., "Doctor's Orders" New Rx Trends, September Industry Report, November 7, 1995, Lehman Brothers.

Note: Prozac, Zoloft, and Paxil are from the new class of antidepressants ("Selective Serotonin Reuptake Inhibitors"); Desyrel and Pamelor are older antidepressants. Zoloft and Paxil were launched in 1992 and 1993, respectively.

Exhibit 10 Expert Estimates for Migraine Project

Participants (all participants had first hand knowledge of the Migraine Project):

Dr. John Lee, Senior Scientist, Combichem Group
 Dr. Edward Pan, Senior Scientist, Combichem Group
 Dr. Beverly Bourell, Senior Scientist, Central Nervous System
 Dr. John Wecker, Senior Scientist, Central Nervous System
 Dr. Clare Pimentel, Senior Prozac Product Manager
 Mr. Ashley Peck, Director of Corporate Marketing

Scenario 1: "If we bring our current lead migraine compound—'a bird in the hand'—to market with no further lead optimization, what do you feel is the chance of passing clinicals?"

Expert	Months Delay	Chance of Passing Clinicals
Lee	0	8%
Pan	0	9
Bourell	0	12
Wecker	0	11
Pimentel	0	10
Peck	0	10%
Average		10%
Standard Deviation		1.4

Scenario 2: "If we spend additional time seeking a better analogue of the current lead migraine compound using combinatorial chemistry, what do you feel is the chance of passing clinicals? At what cost in time required to reach the market?"

Expert	Months Delay	Chance of Passing Clinicals
Lee	7	15%
Pan	6	14
Bourell	11	11
Wecker	12	11
Pimentel	8	10
Peck	10	11%
Average	9.0	12%
Standard Deviation	2.4	2.0

Scenario 3: "If we go back to basic research and use combinatorial chemistry to try developing a new breakthrough migraine drug platform, what do you feel is the chance of passing clinicals? At what cost in time required to reach the market?"

Expert	Months Delay	Chance of Passing Clinicals
Lee	12	20%
Pan	12	19
Bourell	26	13
Wecker	25	13
Pimentel	16	14
Peck	17	11%
Average	18.0	15%
Standard Deviation	6.2	3.6

Exhibit 11 Timeline

4000-2000 BC:	Ancient Egyptians develop compresses around skull to stop migraines. (Procedure still used in 1990s)
1876	Eli Lilly founded in Indianapolis, Indiana by Colonel Eli Lilly.
1970s	Early research in Lilly on serotonin.
1980s	Prozac launched on market in 1988.
1991	- Serotonin "1f" receptor cloned by Lilly's collaborator, Synaptic Pharmaceutical Corporation. Rapid screening procedures utilizing Synaptic's technology allow 20-30 compounds to be screened weekly. - CNS group starts screening serotonin-like compounds from Lilly's historical library (total 250,000 compounds). During next three years over 1,000 compounds will be screened.
1992	Glaxo launches sumatriptan (Imitrex).
1994	
March/April	"Hot" lead compound found from the screen with good fit at the serotonin 1f receptor. - Kaldor gives combinatorial chemistry seminar to an in-house audience at Lilly that includes Schaus. This serves as catalyst for Kaldor-Schaus collaboration.
March-June	Improvements upon this lead made using traditional chemistry. Screening proceeds using an improved assay, which now tests 50 compounds per week.
September	Sphinx acquired. Will take almost another year to integrate Sphinx's leading edge technology in combichem and high-throughput screening
December	Schaus presents seminar on his research to other CNS research group leaders. Able to demonstrate that combichem can lead to pure, quantifiable results.
1995	
February	PTAC (Project Approval Committee) meets to discuss strategic choices in migraine project.
2001	Projected launch, if approved, of Lilly's migraine product.
2003	Patent protection of Prozac ends.

Source: Lilly migraine project dates: interviews conducted with Lilly personnel.

Glossary

- Analogue:** A structural variation of a parent molecule. Useful analogue compounds may exhibit fewer adverse effects or might be therapeutic in smaller doses.
- Assay:** A test to determine properties of a chemical entity such as strength or purity or activity in a biological system.
- Central Nervous System (CNS) Disease:** Any disease primarily affecting behavior, movement, perception or other components of the central nervous system. Examples include Alzheimer's disease, depression, and migraine.
- Combinatorial Chemistry:** A branch of synthetic chemistry developed that allows for systematically generating large numbers of chemically diverse but related compounds. Combinatorial chemistry, thus, potentially allows drug makers to rapidly generate and explore thousands of compounds in just weeks in order to find promising compounds.
- Compound:** A distinct chemical entity formed by the union of two or more ingredients in a distinctive proportion. Drug compounds are formed from a distinctive proportion of differing chemical elements.
- Library:** A collection of differing compounds (analogous to a library of books), usually maintained for further study. Drug firms often maintain libraries of all compounds synthesized in the past by their scientists.
- Molecular Diversity:** The importance of molecular diversity—analogue to diversity found within the human race—stems from the fact that even minor changes in molecular structure can tremendously alter function. As a result, drug makers seek to adequately explore molecular diversity of a promising drug's analogues in order to field the best possible drug.
- Neurotransmitter:** A molecular agent capable of transmitting signals from one nerve to another (for instance, serotonin) by acting upon specific receptors.
- Receptor:** A specialized protein located on or within cells in the body capable of detecting specific environmental changes. Receptors in the nervous system, once activated by neurotransmitters, will often trigger specific responses within the body.
- Screening:** The process of systematically examining a collection of compounds to find those with the most promise for a given purpose (such as drug development). "High-throughput screening" refers to the ability to screen a large number of compounds in a short time period – a capability needed to successfully apply combinatorial chemistry.
- Serotonin:** A compound (chemically termed 5-hydroxytryptamine) widely distributed in the body. Serotonin serves as a neurotransmitter by acting at different receptors in the nervous system, and has been implicated with conditions and behaviors as diverse as depression, migraine, sleep, and aggression.
- Serotonin receptors:** specialized proteins in the body capable of detecting and responding to serotonin. Within the body, over a dozen different subclasses (for instance "1f" and "1d") of serotonin receptors exist at sites ranging from the blood stream to the intestines to the nervous system. Analogues of serotonin may act in differing ways at differing subclasses of serotonin receptors.
- Synthetic Chemistry:** The branch of chemistry dealing with the creation of compounds in the laboratory.

Innovating organizations—those that are designed to do something for the first time—call for unique structures, information and decision processes, and reward and people-selection systems.

Designing the Innovating Organization

Jay R. Galbraith

Innovation is in. New workable, marketable ideas are being sought and promoted these days as never before in the effort to restore U.S. leadership in technology, in productivity growth, and in the ability to compete in the world marketplace. Innovative methods for conserving energy and adapting to new energy sources are also in demand.

The popular press uses words like *revitalization* to capture the essence of the issue. The primary culprit of our undoing, up until now, has been management's short-run earnings focus. However, even some patient

managers with long-term views are finding that they cannot buy innovation. They cannot exhort their operating organizations to be more innovative and creative. Patience, money, and a supportive leadership are not enough. It takes more than these things to achieve innovation.

It is my contention that innovation requires an organization specifically designed for that purpose—that is, such an organization's structure, processes, rewards, and people must be combined in a special way to create an innovating organization, one that is

designed to do something for the first time. The point to be emphasized here is that the innovating organization's components are completely different from and often contrary to those of existing organizations, which are generally operating organizations. The latter are designed to efficiently process the millionth loan, produce the millionth automobile, or serve the millionth client. An organization that is designed to do something well for the millionth time is not good at doing something for the first time. Therefore, organizations that want to innovate or revitalize themselves need two organizations, an operating organization and an innovating organization. In addition, if the ideas produced by the innovating organization are to be implemented by the operating organization, they need a transition process to transfer ideas from the innovating organization to the operating organization.

This article will describe the components of an organization geared to producing innovative ideas. Specifically, in the next section of this article, I describe a case history that illustrates the components required for successful innovation. Then I will explore the lessons to be learned from this case history by describing the role structure, the key processes, the reward systems, and the people practices that characterize an innovating organization.

THE INNOVATING PROCESS

Before I describe the typical process by which innovations occur in organizations, we must understand what we are discussing. What is innovation? How do we distinguish between invention and innovation? Invention is the creation of a new idea. Innovation is the process of applying a new idea to create a new process or product. Invention occurs more frequently than innovation. In addition, the kind of innovation in which we

are interested here is the kind that becomes necessary to implement a new idea that is not consistent with the current concept of the organization's business. Many new ideas that are consistent with an organization's current business concept are routinely generated in some companies. Those are not our current concern; here we are concerned with implementing inventions that are good ideas but do not quite fit into the organization's current mold. Industry has a poor track record with this type of innovation. Most major technological changes come from outside an industry. The mechanical typewriter manufacturers did not introduce the electric typewriter; the electric typewriter people did not invent the electronic typewriter; vacuum tube companies did not introduce the transistor, and so on. Our objective is to describe an organization that will increase the odds that such nonroutine innovations can be made. The following case history of a nonroutine innovation presents a number of lessons that illustrate how we can design an innovating organization.

THE CASE HISTORY

The organization in question is a venture that was started in the early seventies. While working for one of our fairly innovative electronics firms, a group of engineers developed a new electronics product. However, they were in a division that did not have the charter for their product. The ensuing political battle caused the engineers to leave and form their own company. They successfully found venture capital and introduced their new product. Initial acceptance was good, and within several years their company was growing rapidly and had become the industry leader.

However, in the early 1970s Intel invented the microprocessor, and by the mid-to-late seventies, this innovation had



Jay R. Galbraith, formerly professor of management at the Wharton School of the University of Pennsylvania, is currently directing his own management consulting firm out of Denver and is associated with several other consulting firms in Boston and Toronto. His principal area of specialization is organization of design change and development. More recently he has concentrated on major strategy and structure changes both in his writing and consulting.

Before joining the Wharton School, Dr. Galbraith was a professor at the Sloan School of Management at the Massachusetts Institute of Technology. From 1972 to 1974, on leave from MIT, he was affiliated with the European Institute for Advanced Studies in Management in Brussels.

Dr. Galbraith has written numerous articles for professional journals, handbooks, and research collections. In addition, he has written three books: *Designing Complex Organizations* (Addison-Wesley, 1973), *Organization Design* (Addison-Wesley, 1977), and *Strategy Implementation* (West Publishing Company, 1978). *Organization Design* was selected by the Organization Development Council as co-recipient of the outstanding book on organizations for the years 1976-77.

He has had considerable consulting experience in the United States, Europe, and South America—particularly on matrix management issues and major reorganizations.

spread through the electronics industries. Manufacturers of previously "dumb" products now had the capability of incorporating intelligence into their product lines. A com-

petitor who understood computers and software introduced just such a product into our new venture firm's market, and it met with high acceptance. The firm's president responded by hiring someone who knew something about microcomputers and some software people and instructing the engineering department to respond to the need for a competing product.

The president spent most of his time raising capital to finance the venture's growth. But when he suddenly realized that the engineers had not made much progress, he instructed them to get a product out quickly. They did, but it was a half-hearted effort. The new product incorporated a microprocessor but was less than the second-generation product that was called for.

Even though the president developed markets in Europe and Singapore, he noticed that the competitor continued to grow faster than his company and had started to steal a share of his company's market. When the competitor became the industry leader, the president decided to take charge of the product-development effort. However, he found that the hardware proponents and software proponents in the engineering department were locked in a political battle. Each group felt that its "magic" was the more powerful. Unfortunately, the lead engineer (who was a co-founder of the firm) was a hardware proponent, and the hardware establishment prevailed. However, they then clashed head-on with the marketing department, which agreed with the software proponents. The conflict resulted in studies and presentations, but no new product. So here was a young, small (1,200 people) entrepreneurial firm that could not innovate even though the president wanted innovation and provided resources to produce it. The lesson is that more was needed.

As the president became more deeply involved in the problem, he received

a call from his New England sales manager, who wanted him to meet a field engineer who had modified the company's product and programmed it in a way that met customer demands. The sales manager suggested, "We may have something here."

Indeed, the president was impressed with what he saw. When the engineer had wanted to use the company's product to track his own inventory, he wrote to company headquarters for programming instructions. The response had been: It's against company policy to send instructional materials to field engineers. Undaunted, the engineer bought a home computer and taught himself to program. He then modified the product in the field and programmed it to solve his problem. When the sales manager happened to see what was done, he recognized its significance and immediately called the president.

The field engineer accompanied the president back to headquarters and presented his work to the engineers who had been working on the second-generation product for so long. They brushed off his efforts as idiosyncratic, and the field engineer was thanked and returned to the field.

A couple of weeks later the sales manager called the president again. He said that the company would lose this talented guy if something wasn't done. Besides, he thought that the field engineer, not engineering, was right. While he was considering what to do with this ingenious engineer, who, on his own had produced more than the entire engineering department, the president received a request from the European sales manager to have the engineer assigned to him.

The European sales manager had heard about the field engineer when he visited headquarters, and had sought him out and listened to his story. The sales manager knew that a French bank wanted the type of

8 application that the field engineer had cre-

ated for himself; a successful application would be worth an order for several hundred machines. The president gave the go-ahead and sent the field engineer to Europe. The engineering department persisted in their view that the program wouldn't work. Three months later, the field engineer successfully developed the application, and the bank signed the order.

When the field engineer returned, the president assigned him to a trusted marketing manager who was told to protect him and get a product out. The engineers were told to support the manager and reluctantly did so. Soon they created some applications software and a printed circuit board that could easily be installed in all existing machines in the field. The addition of this board and the software temporarily saved the company and made its current product slightly superior to that of the competitor.

Elated, the president congratulated the young field engineer and gave him a good staff position working on special assignments to develop software. Then problems arose. When the president tried to get the personnel department to give the engineer a special cash award, they were reluctant. "After all," they said, "other people worked on the effort, too. It will set a precedent." And so it went. The finance department wanted to withhold \$500 from the engineer's pay because he had received a \$1,000 advance for his European trip, but had turned in vouchers for only \$500.

The engineer didn't help himself very much either; he was hard to get along with and refused to accept supervision from anyone except the European sales manager. When the president arranged to have him permanently transferred to Europe on three occasions, the engineer changed his mind about going at the last minute. The president is still wondering what to do with him.

There are a number of lessons about the needs of an innovative organiza-

tion in this not uncommon story. The next section elaborates on these lessons.

THE INNOVATING ORGANIZATION

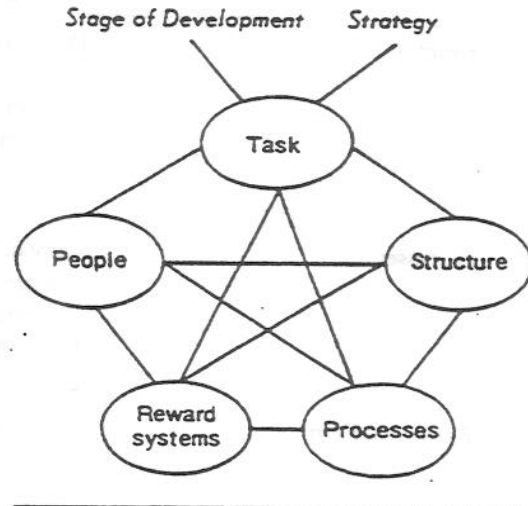
Before we can draw upon the case history's lessons, it is important to note that the basic components of the innovating organization are no different from those of an operating organization. That is, both include a task, a structure, processes, reward systems, and people, as shown in Figure 1. Figure 2 compares the design parameters of the operating organization's components with those of the innovating organization's components.

This figure shows that each component must fit with each of the other components and with the task. A basic premise of this article is that the task of the innovating organization is fundamentally different from that of the operating organization. The innovating task is more uncertain and risky, takes place over longer time periods, assumes that failure in the early stages may be desirable, and so on. Therefore, the organization that performs the innovative task should also be different. Obviously, a firm that wishes to innovate needs both an operating organization and an innovating organization. Let's look at the latter.

STRUCTURE OF THE INNOVATING ORGANIZATION

The structure of the innovating organization encompasses these elements: (1) people to fill three vital roles — idea generators, sponsors, and orchestrators; (2) differentiation, a process that differentiates or separates the innovating organization's activities from those of the operating organization; and (3) "reservations," the means by which the separation occurs — and this may be accomplished physically, financially, or organizationally.

Figure 1
ORGANIZATION DESIGN COMPONENTS



The part that each of these elements plays in the commercialization of a new idea can be illustrated by referring to the case history.

Roles

Like any organized phenomenon, innovation is brought about through the efforts of people who interact in a combination of roles. Innovation is not an individual phenomenon. People who must interact to produce a commercial product — that is, to innovate in the sense we are discussing — play their roles as follows:

- Every innovation starts with an *idea generator* or idea champion. In the above example, the field engineer was the person who generated the new idea — that is, the inventor, the entrepreneur, or risk taker on whom much of our attention has been focused. The case history showed that an idea champion is needed at each stage of an idea's or an invention's development into an innovation. That is, at each stage there must be a dedicated, full-time individual whose

Figure 2
COMPARISON OF COMPONENTS OF OPERATING AND INNOVATING ORGANIZATIONS

	Operating Organization	Innovating Organization
<i>Structure</i>	Division of labor Departmentalization Span of control Distribution of power	Roles: Orchestrator Sponsor Idea generator (champion) Differentiation Reservations
<i>Processes</i>	Providing information and communication Planning and budgeting Measuring performance Linking departments	Planning/funding Getting ideas Blending ideas Transitioning Managing programs
<i>Reward systems</i>	Compensation Promotion Leader style Job design	Opportunity/autonomy Promotion/recognition Special compensation
<i>People</i>	Selection/recruitment Promotion/transfer Training/development	Selection/self-selection Training/development

success or failure depends on developing the idea. The idea generator is usually a low-level person who experiences a problem and develops a new response to it. The lesson here is that many ideas originate down where "the rubber meets the road." The low status and authority level of the idea generator creates a need for someone to play the next role.

- Every idea needs at least one *sponsor* to promote it. To carry an idea through to implementation, someone has to discover it and fund the increasingly disruptive and expensive development and testing efforts that shape it. Thus idea generators need to find sponsors for their ideas so they can perfect them. In our example, the New England sales manager, the European sales manager, and finally the marketing manager all sponsored the field engineer's idea. Thus one of the sponsor's functions is to lend his

carry the idea closer to commercialization.

The sponsor must also recognize the business significance of an idea. In any organization, there are hundreds of ideas being promoted at any one time. The sponsor must select from among these ideas those that might become marketable. Thus it is best that sponsors be generalists. (However, that is not always the case, as our case history illustrates.)

Sponsors are usually middle managers who may be anywhere in the organization and who usually work for both the operating and the innovating organization. Some sponsors run divisions or departments. They must be able to balance the operating and innovating needs of their business or function. On the other hand, when the firm can afford the creation of venture groups, new product development departments, and the like, sponsors may work full time for the innovating organization. In the

case history, the two sales managers spontaneously became sponsors and the marketing manager was formally designated as a sponsor by the president. The point here is that by formally designating the role or recognizing it, funding it with monies earmarked for innovation, creating innovating incentives, and developing and selecting sponsorship skills, the organization can improve its odds of coming up with successful innovations. Not much attention has been given to sponsors, but they need equal attention because innovation will not occur unless there are people in the company who will fill all three roles.

- The third role illustrated in the case history is that of the *orchestrator*. The president played this role. An orchestrator is necessary because new ideas are never neutral. Innovative ideas are destructive; they destroy investments in capital equipment and people's careers. The management of ideas is a political process. The problem is that the political struggle is biased toward those in the establishment who have authority and control of resources. The orchestrator must balance the power to give the new idea a chance to be tested in the face of a negative establishment. The orchestrator must protect idea people, promote the opportunity to try out new ideas, and back those whose ideas prove effective. This person must legitimize the whole process. That is what the president did with the field engineer; before he became involved, the hardware establishment had prevailed. Without an orchestrator, there can be no innovation.

To play their roles successfully, orchestrators use the processes and rewards to be described in the following sections. That is, a person orchestrates by funding innovating activities and creating incentives for middle managers to sponsor innovating ideas. Orchestrators are the organization's top managers, and they must design the innovating organization.

The typical operating role structure of a divisionalized firm is shown in Figure 3. The hierarchy is one of the operating functions reporting to division general managers who are, in turn, grouped under group executives. The group executives report to the chief executive officer (CEO). Some of these people play roles in both the operating and the innovating organization.

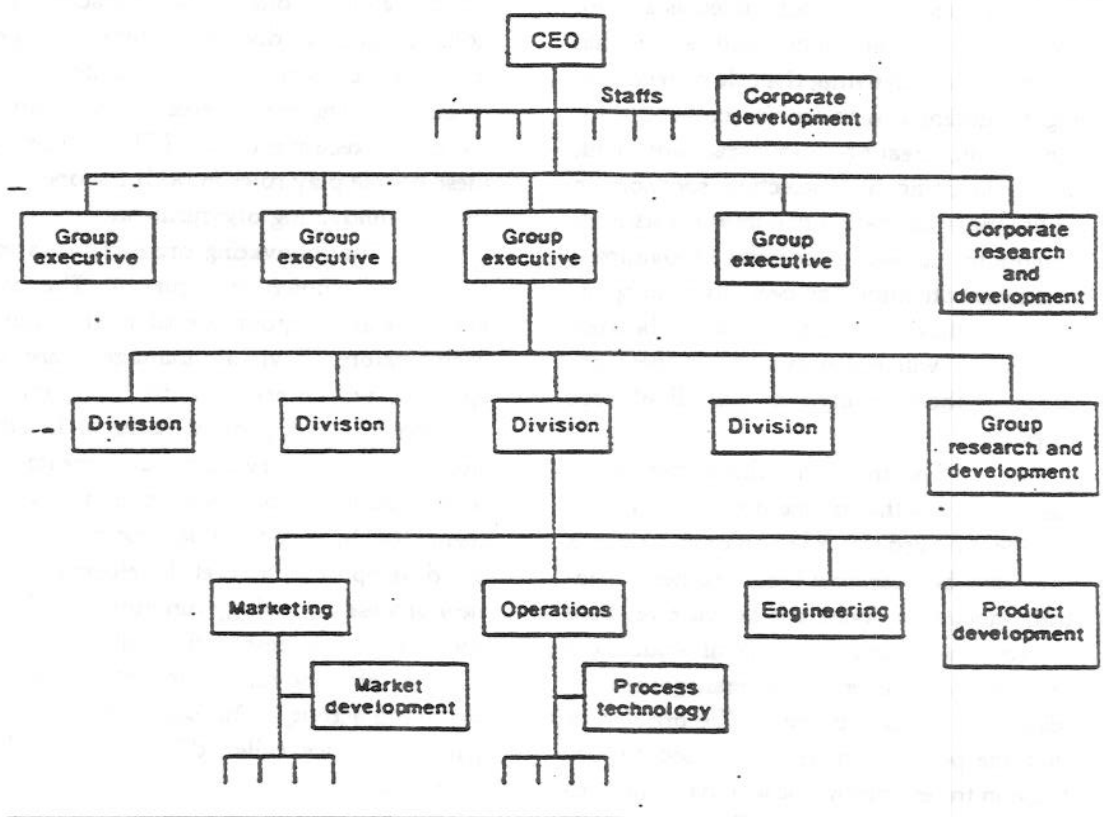
The innovating organization's role structure is shown in Figure 4. The chief executive and a group executive function as orchestrators. Division managers are the sponsors who work in both the operating and the innovating organizations. In addition, several reservations are created in which managers of research and development (R&D), corporate development, product development, market development, and new process technology function as full-time sponsors. These reservations allow the separation of innovating activity from the operating activity. This separation is an organizing choice called *differentiation*. It is described next.

Differentiation

In the case history we saw that the innovative idea perfected at a remote site was relatively advanced before it was discovered by management. The lesson to be learned from this is that if one wants to stimulate new ideas, the odds are better if early efforts to perfect and test new "crazy" ideas are differentiated—that is, separated—from the functions of the operating organization. Such differentiation occurs when an effort is separated physically, financially, and/or organizationally from the day-to-day activities that are likely to disrupt it. If the field engineer had worked within the engineering department or at company headquarters, his idea probably would have been snuffed out prematurely.

Another kind of differentiation can 11

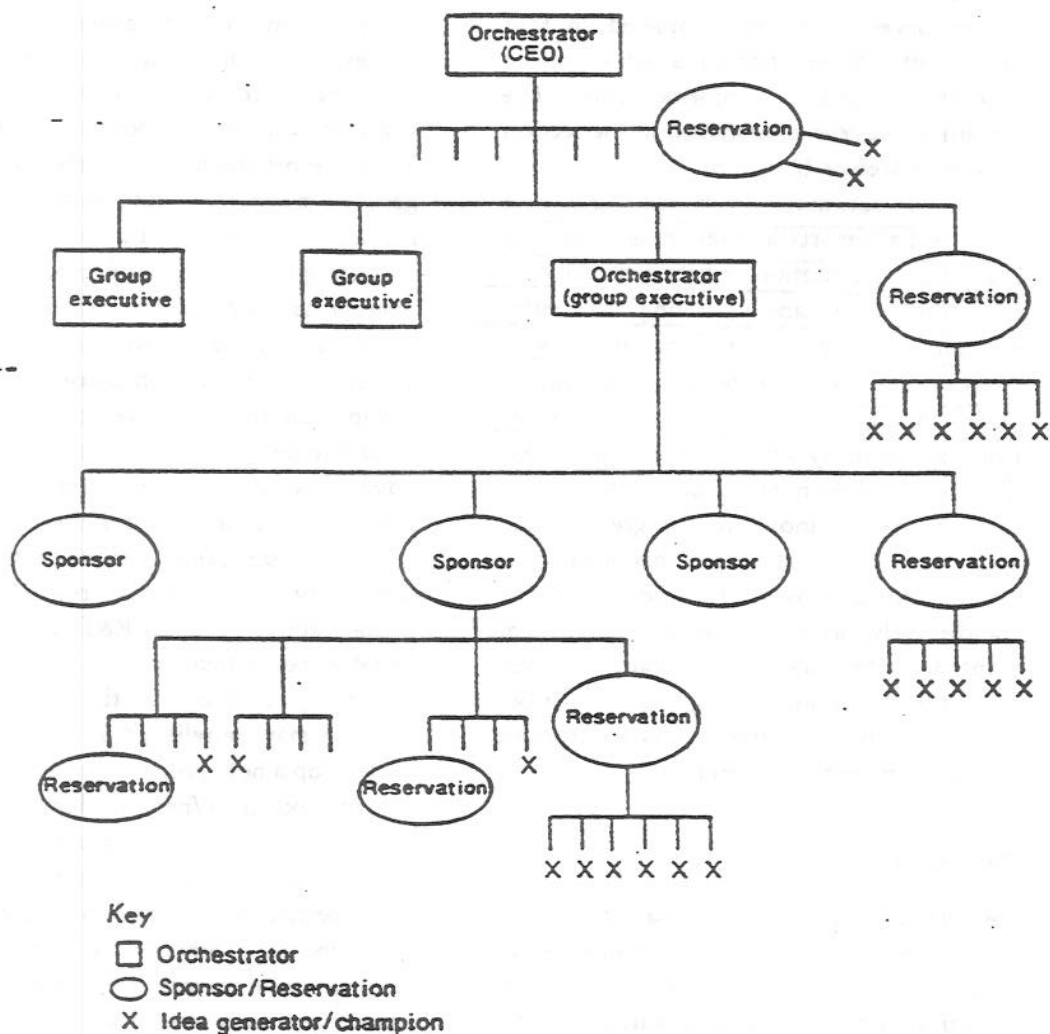
Figure 3
TYPICAL OPERATING STRUCTURE OF DIVISIONALIZED FIRM



be accomplished by freeing initial idea tests from staff controls designed for the operating organization. The effect of too much control is illustrated by one company in which a decision on whether to buy an oscilloscope took about 15 to 30 minutes (with a shout across the room) before the company was acquired by a larger organization. After the acquisition, that same type of decision took 12 to 18 months because the purchase required a capital appropriation request. Controls based on operating logic reduce the innovating organization's ability to rapidly, cheaply, and frequently test and modify new ideas. Thus, the more differentiated an initial effort is, the greater the likelihood of innovation.

however, is that it decreases the likelihood that a new proven idea will be transferred back to the operating organization. Herein lies the differentiation/transfer dilemma: The more differentiated the effort, the greater the likelihood of producing a new business idea, but the less likelihood of transferring the new idea into the operating organization for implementation. The dilemma occurs only when the organization needs both invention and transfer. That is, some organizations may not need to transfer new ideas to the operating organization. For example, when Exxon started its information systems business, there was no intention to have the petroleum company run this area of business. Exxon innovators had to grow their own operating organizations; therefore, they could

Figure 4
AN INNOVATING ROLE STRUCTURE
(differentiation)



maximize differentiation in the early phases. Alternatively, when Intel started work on the 64K RAM (the next generation of semiconductor memories, this random access memory holds roughly 64,000 bits of information), the effort was consistent with their current business and the transfer into fabrication and sales was critical. Therefore, the development effort was only minimally sep-

arated from the operating division that was producing the 16K RAM. The problem becomes particularly difficult when a new product or process differs from current ones, but must be implemented through the current manufacturing and sales organizations. The greater the need for invention and the greater the difference between the new idea and the existing business concept, the greater

6-04

the degree of differentiation required to perfect the idea. The only way to accomplish both invention and transfer is to proceed stagewise. That is, differentiate in the early phases and then start the transition process before development is completed so that only a little differentiation is left when the product is ready for implementation. The transition process is described in the section on key processes (page 15).

In summary, invention occurs best when initial efforts are separated from the operating organization and its controls—because innovating and operating are fundamentally opposing logics. This kind of separation allows both to be performed simultaneously and prevents the establishment from prematurely snuffing out a new idea. The less the dominant culture of the organization supports innovation, the greater is the need for separation. Often this separation occurs naturally as in the case history, or clandestinely, as in "bootlegging." If a firm wants to foster innovation, it can create reservations where innovating activity can occur as a matter of course. Let us now turn to this last structural parameter.

Reservations

Reservations are organizational units, such as R&D groups, that are totally devoted to creating new ideas for future business. The intention is to reproduce a garage-like atmosphere where people can rapidly and frequently test their ideas. Reservations are havens for "safe learning." When innovating, one wants to maximize early failure to promote learning. On reservations that are separated from operations, this cheap, rapid screening can take place.

Reservations permit differentiation to occur by housing people who work solely for the innovating organization and by having a reservation manager who works full

within divisions and/or at corporate headquarters to permit various degrees of differentiation.

Reservations can be internal or external. Internal reservations may include some staff and research groups, product and process development labs, and groups that are devoted to market development, new ventures, and/or corporate development. They are organizational homes where idea generators can contribute without becoming managers. Originally, this was the purpose of staff groups, but staff groups now frequently assume control responsibilities or are narrow specialists who contribute to the current business idea. Because such internal groups can be expensive, outside reservations like universities, consulting firms, and advertising agencies are often used to tap nonmanagerial idea generators.

Reservations can be permanent or temporary. The internal reservations described above, such as R&D units, are reasonably permanent entities. Others can be temporary. Members of the operating organization may be relieved of operating duties to develop a new program, a new process, or a new product. When developed, they take the idea into the operating organization and resume their operating responsibilities. But for a period of time they are differentiated from operating functions to varying degrees in order to innovate, fail, learn, and ultimately perfect a new idea.

Collectively the roles of orchestrators, sponsors, and idea generators working with and on reservations constitute the structure of the innovating organization. Some of the people, such as sponsors and orchestrators, play roles in both organizations; reservation managers and idea generators work only for the innovating organization. Virtually everyone in the organization can be an idea generator, and all middle managers are potential sponsors. However not all choose to play these roles. People vary

considerably in their innovating skills. By recognizing the need for these roles, developing people to fill them, giving them opportunity to use their skills in key processes, and rewarding innovating accomplishments, the organization can do considerably better than just allowing a spontaneous process to work. Several key processes are part and parcel of this innovating organizational structure. These are described in the next section.

KEY PROCESSES

In our case history, the idea generator and the first two sponsors found each other through happenstance. The odds of such propitious match-ups can be significantly improved through the explicit design of processes that help sponsors and idea generators find each other. The chances of successful match-ups can be improved by such funding, getting ideas, and blending ideas. In addition, the processes of transitioning and program management move ideas from reservations into operations. Each of these is described below.

Funding

A key process that increases our ability to innovate is a funding process that is explicitly earmarked for the innovating organization. A leader in this field is Texas Instruments

(TI), a company that budgets and allocates funds for both operating and innovating. In essence the orchestrators make the short-run/long-run tradeoff at this point. They then orchestrate by choosing where to place the innovating funds—with division sponsors or corporate reservations. The funding process is a key tool for orchestration.

Another lesson to be learned from the case history is that it frequently takes more than one sponsor to launch a new idea. The field engineer's idea would never have been brought to management's attention without the New England sales manager. It would never have been tested in the market without the European sales manager. Multiple sponsors keep fragile ideas alive. If engineering had been the only available sponsor for technical ideas, there would have been no innovation.

Some organizations purposely create a multiple sponsoring system and make it legitimate for an idea generator to go to any sponsor who has funding for new ideas. Multiple sponsors duplicate the market system of multiple bankers for entrepreneurs. At Minnesota Mining and Manufacturing (3M), for example, an idea generator can go to his or her division sponsor for funding. If refused, the idea generator can then go to any other division sponsor or even to corporate R&D. If the idea is outside current business lines, the idea generator can go to the new ventures group for support. If the idea is

"[I]nvention occurs best when initial efforts are separated from the operating organization and its controls—because innovating and operating are fundamentally opposing logics."

rejected by all possible sponsors, it probably isn't a very good idea. However, the idea is kept alive and given several opportunities to be tested. Multiple sponsors keep fragile young ideas alive.

Getting Ideas

The process of getting ideas occurs by happenstance as it did in the case history. The premise of this section is that the odds of match-ups between idea generators and sponsors can be improved by organization design. First, the natural process can be improved by network-building actions such as multidivision or multireservation careers or company-wide seminars and conferences. All of these practices, plus a common physical location facilitate matching at 3M.

The matching process is formalized at TI, where there is an elaborate planning process called the objectives, strategies and tactics or OST system, which is an annual harvest of new ideas. Innovating funds are distributed to managers of objectives (sponsors) who fund projects based on ideas formulated by idea generators, and these then become tactical action programs. Ideas that are not funded go into a creative backlog to be tapped throughout the year. Whether formal, as at TI, or informal, as at 3M, it is noteworthy that these are known systems for matching ideas with sponsors.

Ideas can also be acquired by aggressive sponsors. Sponsors sit at the crossroads of many ideas and often arrive at a better idea by putting two or more together. They can then pursue an idea generator to champion it. Good sponsors know where the proven idea people are located and how to attract such people to come to perfect an idea on their reservation. Sponsors can go inside or outside the organization to pursue these idea people.

And finally, formal events for matching purposes can be scheduled. At 3M,

for example, there's an annual fair at which idea generators can set up booths to be viewed by shopping sponsors. Exxon Enterprises held a "shake the tree event" at which idea people could throw out ideas to be pursued by attending sponsors. The variations of such events are endless. The point is that by devoting time to ideas and making innovation legitimate, the odds that sponsors will find new ideas are increased.

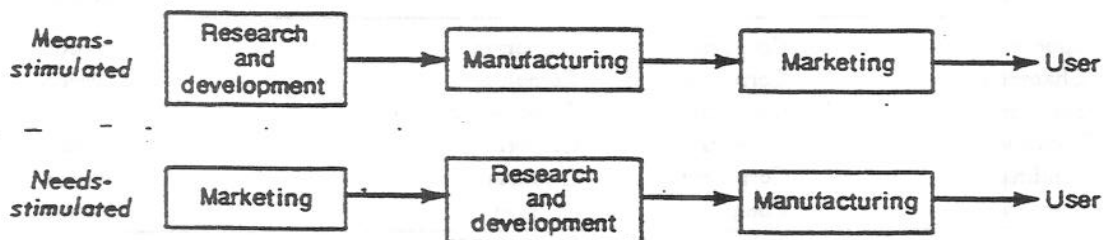
Blending Ideas

An important lesson to be derived from our scenario is that it is no accident that a field engineer produced the new product idea. Why? Because the field engineer spent all day working on customer problems and also knew the technology. Therefore, one person knew the need and the means by which to satisfy that need. (An added plus: The field engineer had a personal need to design the appropriate technology.) The premise here is that innovation is more likely to occur when knowledge of technologies and user requirements are combined in the minds of as few people as possible—preferably in that of one person.

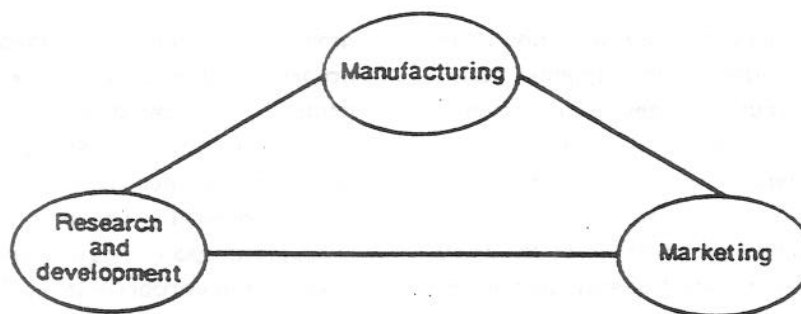
The question of whether innovations are need-stimulated or means-stimulated is debatable. Do you start with the disease and look for a cure, or start with a cure and find a disease for it? Research indicates that two-thirds of innovations are need-stimulated. But this argument misses the point. As shown in Figure 5(a), the debate is over whether use or means drives the downstream efforts. This thinking is linear and sequential. Instead, the model suggested here is shown in Figure 5(b). That is, for innovation to occur, knowledge of all key components is simultaneously coupled. And the best way to maximize communication among the components is to have the communication occur intrapersonally—that is, within one person's mind. If this is impossible, then as

Figure 5
 LINEAR SEQUENTIAL COUPLING COMPARED WITH SIMULTANEOUS COUPLING OF KNOWLEDGE

(a) *Linear Sequential Coupling*



(b) *Simultaneous Coupling*



few people as possible should have to communicate or interact. The point is that innovative ideas occur when knowledge of the essential specialties is coupled in as few heads as possible. To encourage such coupling, the organization can grow or select individuals with the essential skills or it can encourage interaction between those with meshing skills. These practices will be discussed in a people section.

A variety of processes are employed by organizations to match knowledge of need and of means. At IBM they place marketing people directly in the R&D labs where they can readily interpret the market requirement documents for researchers. People are rotated through this unit, and a network is created. Wang holds an annual users' conference at which customers and product designers interact and discuss the use of Wang products. Lanier insists that all

top managers, including R&D management, spend one day a month selling in the field. It is reported that British scientists made remarkable progress on developing radar after actually flying missions with the Royal Air Force. In all these cases there is an explicit matching of the use and the user with knowledge of a technology to meet the use. Again these processes are explicitly designed to get a user orientation among the idea generators and sponsors. They increase the likelihood that inventions will be innovations. The more complete a new idea or invention is at its inception, the greater the likelihood of its being transferred into the operating organization.

Transitioning

Perhaps the most crucial process in getting an innovative product to market is the tran-

Figure 6
TRANSITIONING IDEAS BY STAGES

Choices	Stages			
	I	II	Nth	Implementation
Sponsor	Corporate	Corporate	...	Division
Champion	Corporate	Corporate	...	Division
Staffing	Corporate	Corporate-division	...	Division
Location	Corporate	Corporate	...	Division
Funding	Corporate	Corporate	...	Division
Autonomy	Complete	Complete	...	Minimal

sitioning of an idea from a reservation to an operating organization for implementation. This process occurs in stages, as illustrated in the case history. First, the idea was formulated in the field before management knew about it. Then it was tested with a customer, the French bank. And finally, at the third stage, development and full-scale implementation took place. In other cases, several additional stages of testing and scale-up may be necessary. In any case, transitioning should be planned in such stages. At each stage the orchestrator has several choices that balance the need for further invention with the need for transfer. The choices and typical stages of idea development are shown in Figure 6.

At each stage these choices face the orchestrator: Who will be the sponsor? Who will be the champion? Where can staff be secured for the effort? At what physical location will work be performed? Who will fund the effort? How much autonomy should the effort have, or how differentiated should it be? For example, at the initial new idea formulation stage the sponsor could be the corporate ventures group with the champion working on the corporate reservation. The effort could be staffed with other corporate reservation types and funded at the corporate level. The activity would be fully separate and autonomous. If the results were

next stage. If the idea needed further development, some division people could be brought in to round out the needed specialties. If the data were still positive after the second stage, then the effort could be transferred physically to the division, but the champion, sponsor, and funding might remain at the corporate level. In this manner, by orchestrating through choices of sponsor, champion, staff, location, funding, and autonomy, the orchestrator balances the need for innovation and protection with the need for testing against reality and transfer.

The above is an all-too-brief outline of the transition process; entire books have been written on the subject of technology transfer. The goal here is to highlight the stagewise nature of the process and the decisions to be made by the orchestrator at each stage. The process is crucial because it is the link between the two organizations. Thus to consistently innovate, the firm needs an innovating organization, an operating organization, and a process for transitioning ideas from the former to the latter.

Managing Programs

Program management is necessary to implement new products and processes within divisions. At this stage of the process, the idea generator usually hands the idea off to a

product/project/program manager. The product or process is then implemented across the functional organization within the division. The systems and organizational processes for managing projects have been discussed elsewhere and will not be discussed here. The point is that a program management process and skill is needed.

In summary, several key processes—that is, funding, getting ideas, blending ideas, transitioning, and managing programs—are basic components of the innovating structure. Even though many of these occur naturally in all organizations, our implicit hypothesis is that the odds for successful innovation can be increased by explicitly designing these processes and by earmarking corporate resources for them. Hundreds of people in organizations choose to innovate voluntarily, as did the field engineer in the case history. However, if there were a reward system for people like these, more would choose to innovate, and more would choose to stay in the organization to do their innovating. The reward system is the next component to be described.

REWARD SYSTEM

The innovating organization, like the operating organization, needs an incentive system to motivate innovating behavior. Because the task of innovating is different from that of operating, the innovating organization needs a different reward system. The innovating task is riskier, more difficult, and takes place over longer time frames. These factors call for some adjustment of the operating organization's reward system, the amount of adjustment depending on how innovative the operating organization is and how attractive outside alternatives are.

The functions of the reward system are threefold: First, the rewards must attract idea people to the company and the reserva-

tions and retain them. Because various firms have different attraction and retention problems, their reward systems must vary. Second, the rewards provide motivation for the extra effort needed to innovate. After 19 failures, for example, something has to motivate the idea generator to make the 20th attempt. And, finally, successful performance deserves a reward. These rewards are primarily for idea generators. However, a reward-measurement system for sponsors is equally important. Various reward systems will be discussed in the next sections.

Rewards for Idea Generators

Reward systems mix several types of internal motivators, such as the opportunity to pursue one's ideas, promotions, recognition, systems, and special compensation. First, people can be attracted and motivated intrinsically by simply giving them the opportunity and autonomy to pursue their own ideas. A reservation can provide such opportunity and autonomy. Idea people—who are internally driven—such as the field engineer in our story can come to a reservation, pursue their own ideas, and be guided and evaluated by a reservation manager. This is a reward in itself, albeit a minimal reward. If that minimal level attracts and motivates idea people, the innovating organization need go no further in creating a separate reward system.

However, if necessary, motivational leverage can be obtained by promotion and recognition for innovating performance. The dual ladder—that is, a system whereby an individual contributor can be promoted and given increased salary without taking on managerial responsibilities—is the best example of such a system. At 3M a contributor can rise in both status and salary to the equivalent of a group executive without becoming a manager. The dual ladder has always existed in R&D, but it is now being ex-

50-110
tended to some other functions as well.

Some firms grant special recognition for high career performance. IBM has its IBM fellows program in which the person selected as a fellow can work on projects of his or her own choosing for five years. At 3M, there is the Carlton Award, which is described as an internal Nobel Prize. Such promotion and recognition systems reward innovation and help create an innovating culture.

When greater motivation is needed, and/or the organization wants to signal the importance of innovation, special compensation is added to the aforementioned systems. Different special compensation systems will be discussed in the order of increasing motivational impact and of increasing dysfunctional ripple effects. The implication is that the firm should use special compensation only to the degree that the need for attraction and for motivation dictate.

Some companies reward successful idea generators with one-time cash awards. For example, International Harvester's share of the combine market jumped from 12 percent to 17 percent because of the introduction of the axial flow combine. The scientist whose six patents contributed to the product development was given \$10,000. If the product continues to succeed, he may be given another award. IBM uses the "Chairman's Outstanding Contribution Award." The current program manager on the 4300 series was given a \$5,000 award for her breakthrough in coding. These awards are made after the idea is successful and primarily serve to reward achievement rather than to attract innovators and provide incentive for future efforts.

Programs that give a "percentage of the take" to the idea generator and early team members provide even stronger motivation. Toy and game companies give a royalty to inventors—both internal and external—of toys and games they produce. Apple

Computer claims to give royalties to employees who write software programs that will run on Apple equipment. A chemical company created a pool by putting aside 4 percent of the first five years earnings from a new business venture, which was to be distributed to the initial venture team. Other companies create pools from percentages that range from 2 to 20 percent of cost savings created by process innovations. In any case, a predetermined contract is created to motivate the idea generator and those who join a risky effort at an early stage.

The most controversial efforts to date are attempts to duplicate free-market rewards within the firm. For example, a couple of years ago, ITT bought a small company named Qume that made high-speed printers. The founder became a millionaire from the sale; he had to quit his previous employer to found the venture capital effort to start Qume. If ITT can make an outsider a millionaire, why not give the same chance to entrepreneurial insiders? Many people advocate such a system but have not found an appropriate formula to implement the idea. For example, one firm created five-year milestones for a venture, the accomplishment of which would result in a cash award of \$6 million to the idea generator. However, the business climate changed after two years, and the idea generator, not surprisingly, tried to make the plan work rather than adapt to the new, unforeseen reality.

Another scheme is to give the idea generator and the initial team some phantom stock, which gets evaluated at sale time in the same way that any acquisition would be evaluated. This process duplicates the free-market process and gives internal people the same venture capital opportunities and risks as they would have on the outside.

The special compensation programs produce motivation and dysfunctions. People who contribute at later stages frequently feel like second-class citizens.

Also, any program that discriminates will create perceptions of unfair treatment and possible fallout in the operating organization. If the benefits are judged to be worth the effort, however, care should be taken to manage the fallout.

Rewards for Sponsors

The case history also demonstrates that sponsors need incentives, too. In the example, because they were being beaten in the market, the sales people had an incentive to adopt a new product. The point is that sponsors will sponsor ideas, but these may not be innovating ideas unless there's something in it for them. The orchestrator's task is to create and communicate those incentives.

Sponsor incentives take many forms. At 3M, division managers have a bonus goal that is reached if 25 percent of their revenue comes from products introduced within the previous five years. When the percentage falls below the goal, and the bonus is threatened, these sponsors become amazingly receptive to new product ideas. The transfer process becomes much easier as a result. Sales growth, revenue increase, numbers of new products, and so on, may be the bases for incentives that motivate sponsors.

Another controversy can arise if the idea generators receive phantom stock. Should the sponsors who supervise these idea people receive phantom stock, too? Some banks have created separate subsidiaries so that sponsors can receive stock in the new venture. To the degree that sponsors contribute to idea development, they will need to be given such stock options, too.

Thus, the innovating organization needs reward systems for both idea generators and sponsors. It should start with a simple reward system and move to more motivating, more complex, and possibly more upsetting types of rewards only if and when

attraction and motivation problems call for them.

PEOPLE

The final policy area to be considered involves people practices. The assumption is that some people who are better at innovating are not necessarily good at operating. Therefore, the ability of the innovating organization to generate new business ideas can be increased by systematically developing and selecting those people who are better at innovating than others. But first the desirable attributes must be identified. These characteristics that identify likely idea generators and sponsors are spelled out in the following sections.

Attributes of Idea Generators

The field engineer in our case history is the stereotype of the inventor. He is not mainstream. He's hard to get along with, and he wasn't afraid to break company policy to perfect his idea. Such people have strong egos that allow them to persist and swim upstream. They generally are not the type of people who get along well in an organization. However, if an organization has reservations, innovating funds, and dual ladders, these people can be attracted and retained.

The psychological attributes of successful entrepreneurs include great need to achieve and to take risks. But, to translate that need into innovation, several other attributes are needed. First, prospective innovators have an irreverence for the status quo. They often come from outcast groups or are newcomers to the company; they are less satisfied with the way things are and have less to lose if there's a change. Successful innovators also need "previous programming in the industry"—that is, an in-depth knowledge of the industry gained through

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either experience or formal education. Hence, the innovator needs industry knowledge, but not the religion.

Previous startup experience is also associated with successful business ventures. As are people who come from incubator firms (for example high-technology companies) and areas (such as Boston and the Silicon Valley) that are noted for creativity.

The amount of organizational effort needed to select these people varies with the ability to attract them to the organization in the first place. If idea people are attracted through reputation, then by funding reservations and employing idea-getting processes, idea people will, in effect, select themselves—they will want to work with the organization—and over time their presence will reinforce the organization's reputation for idea generation. If the firm has no reputation for innovation, then idea people must be sought out or external reservations established to encourage initial idea generation. One firm made extensive use of outside recruiting to accomplish such a goal. A sponsor would develop an idea and then attend annual conferences of key specialists to determine who was most skilled in the area of interest; he or she would then interview appropriate candidates and offer the opportunity to develop the venture to those with entrepreneurial interests.

Another key attribute of successful business innovators is varied experience, which creates the coupling of a knowledge of means and of use in a single individual's mind. It is the generalist, not the specialist, who creates an idea that differs from the firm's current business line. Specialists are inventors; generalists are innovators. These people can be selected or developed. One ceramics engineering firm selects the best and the brightest graduates from the ceramics engineering schools and places them in central engineering to learn the firm's overall system. They are then assigned to field engineering where they spend three to five years with customers and their problems and then they return to central engineering product design. Only then do they design products for those customers. This type of internal coupling can be created by role rotation. Some aerospace firms rotate engineers through manufacturing liaison.

People who have the characteristics that make them successful innovators can be retained, however, only if there are reservations for them and sponsors to guide them.

Attributes of Sponsors and Reservation Managers

The innovating organization must also attract, develop, train, and retain people to

22 "[T]he idea generator [does] not take very well to being supervised. Idea generators and champions have a great deal of ownership in their ideas. They gain their satisfaction from having 'done it their way.'"

manage the idea development process. Because certain types of people and management skills are better suited to managing ideas than others, likely prospects for such positions should have a management style that enables them to handle idea people, as well as early experience in innovating, the capability to generate ideas of their own, the skills to put deals together, and generalist business skills.

One of the key skills necessary for operating an innovating organization is the skill to manage and supervise the kind of person who is likely to be an idea generator and champion—that is, people who, among other characteristics, do not take very well to being supervised. Idea generators and champions have a great deal of ownership in their ideas. They gain their satisfaction by having “done it their way.” The intrinsic satisfaction comes from the ownership and autonomy. However, idea people also need help, advice, and sounding boards. The successful sponsor learns how to manage these people in the same way that a producer or publisher learns to handle the egos of their stars and writers. This style was best described by a successful sponsor:

It's a lot like teaching your kids to ride a bike. You're there. You walk along behind. If the kid takes off, he or she never knows that they could have been helped. If they stagger a little, you lend a helping hand, undetected preferably. If they fall, you catch them. If they do something stupid, you take the bike away until they're ready.

This style is quite different from the hands-on, directive style of managers in an operating organization. Of course, the best way to learn this style is to have been managed by it and seen it practiced in an innovating organization. Therefore, experience in an innovating organization is essential.

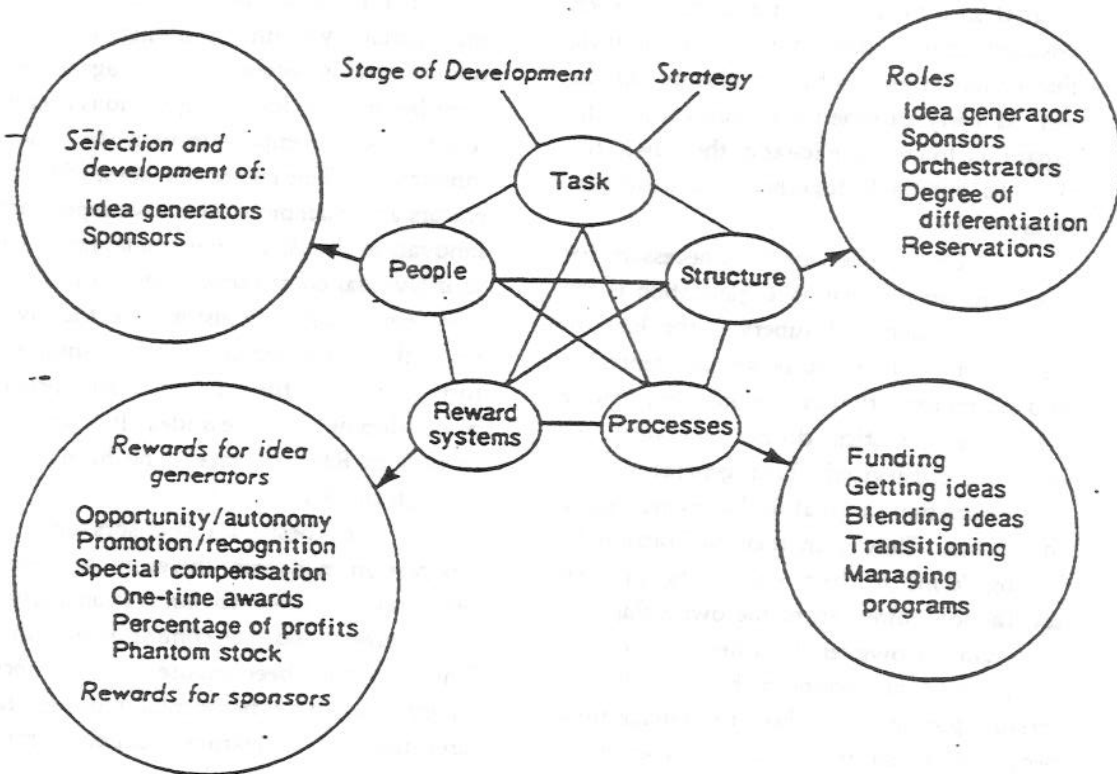
More than the idea generators, the sponsors need to understand the logic of innovation and to have experienced the man-

agement of innovation. Its managers need to have an intuitive feel for the task and its nuances. Managers whose only experience is in operations will not have developed the managerial style, understanding, and intuitive feel that is necessary to manage innovations because the logic of operations is counterintuitive in comparison with the logic of innovations. This means that some idea generators and champions who have experienced innovation should become managers as well as individual contributors. For example, the president in our case history was the inventor of the first-generation product and therefore understood the long, agonizing process of developing a business idea. It is also rare to find an R&D manager who hasn't come through the R&D ranks.

The best idea sponsors and idea reservation managers, therefore, are people who have experienced innovation early in their careers and are comfortable with it. They will have been exposed to risk, uncertainty, parallel experiments, repeated failures that led to learning, coupling rather than assembly-line thinking, long time frames, and personal control systems based on people and ideas, not numbers and budget variances. Sponsors and reservation managers can be developed or recruited from the outside.

Sponsors and reservation managers need to be idea generators themselves. Ideas tend to come from two sources. The first is at low levels of the organization where the problem gap is experienced. The idea generator who offers a solution is the one who experienced the problem and goes to a sponsor for testing and development. One problem with these ideas is that they may offer only partial solutions because they come from specialists whose views can be parochial and local. But sponsors are at the crossroads of many ideas. They may get a broader vision of the emerging situation as a result. These

Figure 7
AN INNOVATING ORGANIZATION'S DESIGN COMPONENTS



idea sponsors can themselves generate an idea that is suitable for the organization's business, or they can blend several partial ideas into a business-adaptable idea. Sponsors and reservation managers who are at the crossroads of idea flow are an important secondary source of new ideas. Therefore, they should be selected and trained for their ability to generate new ideas.

Another skill that sponsors and especially reservation managers need is the ability to make deals and broker ideas. Once an idea has emerged, a reservation manager may have to argue for the release of key people, space, resources, charters, for produc-

tion time, or a customer contact. These deals all require someone who is adept at persuasion. In that sense, handling them is no different than project or product management roles. People do vary in their ability to make deals and to bargain and those who are particularly adept should be selected for these roles. However, those who have other idea management skills may well be able to be trained in negotiating and bargaining.

And, finally, sponsors and reservation managers should be generalists with general business skills. Again, the ability to recognize a business idea and to shape partial ideas into business ideas are needed.

Sponsors and reservation managers must coach idea generators in specialties in which the idea generator is not schooled. Most successful research managers are those with business skills who can see the business significance in the good ideas that come from scientists.

— In summary, the sponsors and reservation managers who manage the idea-development process must be recruited, selected, and developed. The skills that these people need relate to their style, experience, idea-generating ability, deal-making ability, and generalist business acumen. People with these skills can either be selected or developed.

Thus some of the attributes of successful idea generators and idea sponsors can be identified. In creating the innovating organization, people with these attributes can be recruited, selected, and/or developed. In so doing, the organization improves its odds at generating and developing new business ideas.

SUMMARY

The innovating organization described is one that recognizes and formalizes the roles, processes, rewards, and people practices that naturally lead to innovations. The point we have emphasized throughout this article is that the organization that purposely designs these roles and processes is more likely to generate innovations than is an organization that doesn't plan for this function. Such a purposely designed organization is needed to overcome the obstacles to innovation. Because innovation is destructive to many established groups, it will be resisted. Innovation is contrary to operations and will be ignored. These and other obstacles are more likely to be overcome if the organization is designed specifically to innovate.

Managers have tried to overcome these obstacles by creating venture groups,

by hiring some entrepreneurs, by creating "breakthrough funds," or by offering special incentives. These are good policies but by themselves will not accomplish the goal. Figure 1 conveyed the message that a consistent set of policies concerning structure, process, rewards, and people are needed. The innovating organization is illustrated in Figure 7. It is the combination of idea people, reservations in which they can operate, sponsors to supervise them, funding for their ideas, and rewards for their success that increase the odds in favor of innovation. Simply implementing one or two of these practices will result in failure and will only give people the impression that such practices do not work. A consistent combination of such practices will create an innovating organization that will work.



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The basic ideas of organization design and of blending structure, processes, rewards, and people practices are described in my earlier book, *Organization Design* (Addison-Wesley, 1978). The idea of differentiation comes from Paul Lawrence and Jay Lorsch's *Organization and Environment* (Harvard Business School, 1967). One can also find there the basic ideas of contingency theory.

The structure of the innovative organization and the three roles involved are similar to those identified in the investment idea and capital budgeting process. These have been identified by Joseph Bower in *The Resource Allocation Process* (Division of Research at Harvard University, 1968).

Innovation itself has been treated in various ways by many people. Some good ideas about technological innovation can be found in Lowell Steele's *Innovation in Big Business* (Elsevier, 1975).





18

WARTON REPROGRAPHICS

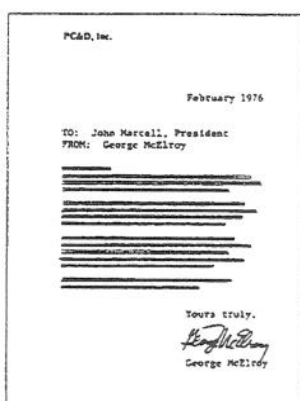
PC&D, Inc.

When we promoted you to the presidency five years ago, we expected that there would be changes, but we never expected you to diminish the importance of the old line businesses to the extent that you have. I think you have erred in doing so. . . .

The new entrepreneurial subs are certainly dynamic and have brought positive press to the company. But, by investing all new resources in them, you are jeopardizing the health of the company as a whole. . . .

My division's reputation has been built over the past 50 years on the superior quality of its products and sales force. But, as the leadership of our products begins to erode, my salesmen are beginning to leave. Without resources, I cannot stop this trend, and, as much as it saddens me to say so, I am losing my own motivation to stay with the company.

These were some excerpts from a letter that the senior vice president and head of the Machinery Division, George McElroy, 58, sent to John Martell, president of PC&D, Inc., in February 1976. McElroy was highly respected in both the company and the industry, a member of the board of directors, and a senior officer of the company for 20 years. Therefore, Martell knew that it was important to respond and to resolve the issues with McElroy successfully. At the same time Martell had no intention of giving up his own prerogatives to direct the company.



History of PC&D, Inc.

Payson & Clark Co.

Payson & Clark, the forerunner of PC&D, was founded during the merger movement around the turn of the century. Four regional machinery companies merged to form a national industrial machinery manufacturing corporation named after the two largest enterprises in the merger, Payson & Clark. With the growth of industry across the country at the time, the demand for heavy machinery also grew

E. Tatum Christiansen, research assistant, prepared this case under the direction of Assistant Professor Richard Hamermesh as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. The company name, the people involved, and the data have been disguised.

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rapidly. The new company benefited from economies of scale, both in production and distribution, and so it prospered.

By 1965 Payson & Clark Co. was an old, stable company still producing machinery. With revenues of \$300 million and net aftertax profits of \$6 million, it was still the largest firm in the industry (see Exhibits 1 and 2 for additional financial information). The company offered the most complete line of heavy industrial equipment in the industry, with its different configurations of standard and custom models filling a large, encyclopedic sales manual. The consistently high quality and unusual breadth of the product line had made attracting high-calibre salespeople relatively easy. These people were highly knowledgeable in the applications of the product line and saw themselves as consultants to their industrial customers.

Although Payson & Clark was the leader in quality and breadth of its product line, it was not the leader in innovations. Rather, it left expensive R&D to others, copying products after they were widely accepted. It could afford to follow others primarily because the industry itself was slow moving. In 1965 the business was essentially the same as when the company was founded. Its growth depended on the general growth of U.S. industry, efficiencies in purchasing raw materials, and the scale and automation of production. Indeed, the company's major innovation came in the early 1950s with the introduction of plastics in some of its models.

In 1965 the company was still structured as it had been in the 1920s, with a standard functional organization and highly centralized chain of command. Its top executives were old-time managers, the average age being 55. Many had spent their entire careers with the firm and could remember the days when old Mr. Payson had kept tight reins on the company in the 1930s and 1940s. Harold C. Payson IV, aged 53 in 1965, was president of the company from the late 1940s and the president and chairman since 1955. Although the company was publicly held, the Payson family still owned a considerable amount of its stock.

In the early 1960s Mr. Payson began to consider succession. He wanted to leave the company in good condition not only for his own personal pride but for the betterment of his heirs. From discussions with his investment bankers and friends in the business world, Mr. Payson had recognized that an association with a high technology, high growth industry would strengthen Payson & Clark's image. One way in which Mr. Payson sought to implement this suggestion was to use some of the excess capital thrown off by the machinery business to enter into joint ventures with young, new companies developing high technology, innovative products. Several such investments were made in the early 1960s, including one with the Datronics Company in 1962.

Datronics Company

In 1965 the Datronics Company was 10 years old with revenues of \$50 million (see Exhibits 3 and 4 for additional financial information). The company had started as an engineering firm subsisting on government research grants and contracts. As a by-product of the government projects, the company also developed several types of sophisticated electronic equipment with wide industrial applications. The company concentrated its efforts on R&D, however, subcontracted production, and bought marketing services for its commercial products. The lack of control over marketing and production and the lost profits passed to the marketers and subcontractors displeased the company's young president, John Martell. In his opinion, the company's growth was limited until the right product emerged to justify becoming a full manufacturing and marketing company.

Following Payson & Clark's investment in 1962, Datronic's engineers developed an existing new product toward the end of 1964 that promised to sell extremely well due to its increased capacity and lower cost. Martell saw the promise of the new product as the waited-for opportunity to expand the company. It was clear, however, that a major influx of capital was needed to bring the product to the market, build a sales force, and begin volume production. Therefore, Martell began a search for

external capital that included a presentation to the joint venture partner, Payson & Clark, which already owned 20% of Datronics' stock.

Meanwhile, Mr. Payson had been following the activities at Datronics closely and was quite aware of the growth potential of the company before Martell's visit. Further, Mr. Payson recognized that Datronics, once its manufacturing operations started, would have a continual need for new capital. If Payson & Clark invested once, it would not be long until another request for resources came from Datronics. With these factors in mind, Mr. Payson decided that the most beneficial arrangement for both parties would be for his company to acquire Datronics. Martell agreed to this offer and negotiations for a friendly takeover were consummated. Payson & Clark acquired Datronics for \$42 million in November 1965, with Martell himself receiving \$8.4 million in cash, notes, and securities. The acquisition provided an opportunity for Payson & Clark to update its image. Patterning itself after other successful growth companies of the time, it changed its name to PC&D, Inc., to denote the beginning of a new era in the company.

PC&D, 1965-1970

After the acquisition, Mr. Payson restructured the company with the help of consultants, setting up a divisional organization. The old Payson & Clark Co. now became the Machinery Division headed by George McElroy, formerly vice president of manufacturing. The Datronics Co. became the Electronics Division headed by Martell.

Electronics Division

At the time of the acquisition the Datronics Co. consisted of several scientific labs, some test equipment, 10 professional engineers, an administrative staff, and Martell. An electrical engineer by training, Martell was a man in his mid-30s. He was energetic and a risk taker by nature, and even as a child in Iowa could not imagine working for someone else all his life. After college at M.I.T., he worked for 8 years at a large, scientific equipment company in the Boston area. Initially, he was hired for the research group, but he was more attracted to the company's management positions. He transferred first to the corporate planning office and then became a division plant manager. With his technical competence and management experience, it was not surprising that he was approached by several of the more innovative of the company's research engineers to invest in and head up a new, independent R&D company. Martell bought in for 25% of the founding stock and thus began the Datronics Company.

During his term as president of Datronics, Martell was highly regarded by the small group of employees. Although he had a respectable command of the technology, he left the research to the engineers, devoting his time to developing sources of challenging and lucrative contracts.

After the acquisition by the Payson & Clark Co., Martell retained full control of the operations of his old organization which became the Electronics Division. He hired an experienced industrial marketer from a large technical firm to set up the marketing operations and a friend from his old employer to head up the production operations. As expected, the demand for the division's new product was very high. Five years later in 1970, the division was a successful growing enterprise, having expanded into other electronics fields. It had 700 employees, marketing offices established or opening throughout the United States, Europe and Japan, plants at three different sites, and revenues of over \$160 million. The business press reported these activities very favorably, giving much credit to Martell's leadership.

Machinery Division

Meanwhile, the Machinery Division continued to be the stalwart of the industry it had always been, retaining its structure and activities of the earlier time. George McElroy, division manager and senior vice president, was considered the division's mainstay. He had joined the company in the early 1950s and was primarily responsible for the plastics innovations of that time. Advisor and confidant of Mr. Payson, McElroy was thought by his subordinates to be next in line for the presidency.

Mr. Payson limited his involvement in the company's internal affairs to reviewing budgets and year-end results, while spending most of his time with community activities and lobbying in Washington. He felt justified in this handsoff policy because of the quality of both his division vice presidents, McElroy and Martell. PC&D's performance further supported Mr. Payson's approach. Revenues climbed to \$530 million, and profits after tax to \$14 million by 1970. The solid 26 multiple of its stock price reflected the confidence in PC&D's prospects (see Exhibits 5 and 6).

The compensation schemes reflected the extent to which Mr. Payson allowed the division managers to be autonomous. McElroy's compensation was 90% salary, with a 10% bonus based on ROI. Martell received two-thirds of his pay as a bonus based on growth in revenues. Compensation policies within each division were entirely at the discretion of either Martell or McElroy. In general, Martell made much greater use of incentive compensation than McElroy.

Change at PC&D, 1970

Toward the end of 1970 Mr. Payson decided that it was time to limit his involvement to that of chairman of the board and to name a new president of PC&D. He supported the appointment of McElroy as the next president. McElroy was the next senior officer in the company and, after years of working with Mr. Payson, held many of the same views on the traditional values of PC&D. Mr. Payson agreed with the school of thought, however, that chief executives should not choose their own successors. He, therefore, established a search committee, consisting of three outside members of the board of directors (see box for a list of board members) and a thorough job was done. The committee interviewed several candidates within PC&D, including Martell and McElroy, and outside candidates were also considered. The committee utilized executive search firms and consultants to identify candidates and carefully compared external and internal prospects. The result was the nomination of Martell. Although his relative youth was a surprise to some, the search committee's report explained the thinking behind the choice: "During the past five years PC&D has experienced an exciting and profitable period of growth and diversification. But it is essential that the company not become complacent. One of our major criteria in choosing a new president was to find a person with the energy and vision to continue PC&D's growth and expansion." The Board unanimously approved the selection of Martell as president and CEO.

Martell began his new position with the board's mandate in mind. He planned to continue the diversification of PC&D into high-growth industries. He expected to follow both an acquisition mode and a startup mode, using the excess funds from the Machinery Division and PC&D's rising stock to finance the growth. For startups, Martell planned to use joint ventures supporting newer companies, much as the old Payson & Clark Co. had supported his venture in its early days.

Martell brought to his position a very definite management style. He was a strong believer in the benefits deriving from an opportunistic, entrepreneurial spirit, and he wanted to inject PC&D with this kind of energy. He was concerned, however, that the people with this kind of spirit would not be attracted to work with PC&D because of the stigma, real or imagined, of working for a large company. Martell commented:

It was my experience that there are two worlds of people, some of whom are very secure and comfortable and satisfied in their career pursuits in large

institutionalized companies, and others of whom are, I think, wild ducks, and who are interested in perhaps greater challenges that small companies present in terms of the necessity to succeed or die.

In many work environments, the constraints placed upon the individual by the nature of the institution are such as to sometimes make people uncomfortable.

The decision-making process is long and involved, sometimes not known, in the sense that the people who act upon decisions are not in close proximity to those who benefit or suffer from the effects of those decisions.

The formalization of the decision-making process is frequently an irritant, and for people who are unusually energetic and demanding, in the sense of desiring, themselves, to take action and to have their actions complemented by the actions of other people upon whom they are dependent, I would characterize these people as perhaps being wild ducks rather than tame ducks. In that sense, I wanted more wild ducks in our company.

Board of Directors, 1970

Harold Payson IV, president, PC&D
 George McElroy, senior vice president,
 Machinery Division, PC&D
 John Martell, vice president,
 Electronics Division, PC&D
 Carl Northrup, treasurer, PC&D
 David S. Curtis, partner, Barth & Gimbel,
 Wall Street Brokerage Firm
 Elizabeth B. Payne, partner, Payne, Bartley
 & Springer, Washington Law Firm
 Charles F. Sprague, president, Forrest
 Products, Inc., (a large manufacturing firm)
 Gardner L. Stacy III, dean, business school,
 state university
 James Hoffman, vice president, Baltimore Analysts
 Association, (an international firm)

Martell himself credited the success of the Electronics Division to Mr. Payson's willingness to turn the reins completely over to him. The secret, Martell thought, was in spotting the right person with both ability and integrity. Corporate headquarters' role should be to provide resources in terms of both money and expertise as needed, to set timetables, to provide measurement points and incentive, and then to keep its hands off.

Although the board's directives were clear to Martell, the specifics for implementation were not. Not only were the larger questions of which way to diversify or how to encourage innovation unanswered, but questions of how to plan and who to involve were also left unclear. Martell was not given the luxury of time to resolve these issues. Within the first week in his new position, three professionals from the Electronics Division called on Martell. Bert Rogers and Elaine Patterson were the key engineers from the research department and Thomas Grennan was head of marketing, western region. They had been working on some ideas for a new product (not competing with any of PC&D's existing lines), and they were ready to leave the company to start their own business to develop and market it. Indeed, they had already had a prospectus prepared for their new venture with the hope that either Martell, personally, or PC&D might be able to provide some venture capital. The president particularly liked these three and admired their willingness to take such personal risks with a product as yet unresearched as to market or design. With his energy and can-do aggressive

style, Grennan reminded Martell of himself just a few years ago when he left to start the Datronics Company.

Martell liked the product and saw the idea as a possible route for continuing PC&D's diversification and growth, but there was a problem. It was clear from the presentation of the three, that much of their motivation came from the desire to start their own company and, through their equity interest, reap the high rewards of their efforts if successful. Martell did not fault this motivation, for it had been his route as well. He could not expect PC&D's managers to take large personal risks if there was no potential for a large payoff. Further, a fair offer to the group, if in salary, required more than PC&D could afford or could justify to the older divisions. Martell told Rogers, Patterson, and Grennan that he was very interested and asked if he could review the prospectus overnight and get back to them the next day. That night he devised a plan with a major feature called the Entrepreneurial Subsidiary. Martell presented this proposal to Grennan, Rogers, and Patterson the next day. They readily accepted it, and thus a pattern began for most PC&D's diversification over the next five years.

The Entrepreneurial Subsidiary

Martell's plan, of which he was particularly proud, worked as follows. When a proposal for a new product area was made to the PC&D corporate office, a new subsidiary would be incorporated—the entrepreneurial subsidiary. The initiators of the idea would leave their old division or company and become officers and employees of the new subsidiary. In the above example, the new subsidiary would be the Pro Instrument Corporation with Grennan as president and Rogers and Patterson as vice presidents.

The new subsidiary would issue stock in its name, \$1 par value, 80% of which would be bought by PC&D and 20% by the entrepreneurs involved—engineers and other key officers. This initial capitalization, plus sizable direct loans from PC&D, provided the funds for the research and development of the new product up to its commercialization. In the case of Pro Instruments, Patterson and Rogers hired 10 other researchers, while Grennan hired a market researcher and a finance-accounting person. These 15 people invested \$50,000 together and PC&D invested another \$200,000.

Two kinds of agreements were signed between the two parties. The first was a research contract between the parent company and the subsidiary, setting time schedules for the research, defining requirements for a commercializable product, outlining budgets, and otherwise stipulating obligations on both sides. In general, the subsidiary was responsible for the R&D and production and testing of a set number of prototypes of a new product, while the parent company would market and produce the product on an international scale. Pro Instruments' agreement stipulated two phases, one lasting 18 months to produce a prototype, and another lasting 6 months to test the product in the field and produce a marketing plan. Detailed budget and personnel needs were outlined, providing for a \$900,000 working capital loan from PC&D during the first phase and \$425,000 during the second.

Although PC&D had proprietary rights on the product and all revenues received from marketing it, the agreement often included an incentive kicker for the key engineers in the form of additional stock to be issued if the finished product produced certain specified amounts of revenue by given dates. This was the case for Pro Instruments: 5,000 shares in year 1, to be issued if net profits were over \$250,000; 20,000 shares in year 2 if profits were over \$1 million and 10,000 in year 3 if profits were over \$3 million.

The second agreement specified the financial obligations and terms for merger. Once the terms of the research contract were met, PC&D, with board approval, had the option for a stated period of time (usually four years) to merge the subsidiary through a one-for-one exchange of PC&D

stock for the stock of the subsidiary, which would then be dissolved. To protect the interests of entrepreneurs, PC&D was required to vote on merger of the subsidiary within 60 days if it met certain criteria. For Pro Instruments, the criteria were (1) the product earned cumulative profits of \$500,000 and (2) if the earnings of PC&D and the subsidiary were consolidated, dilution of PC&D's EPS would not have occurred over three consecutive quarters. If PC&D did not choose to merge during the 60 days, then the subsidiary had a right to buy out PC&D's interest.

Since PC&D's stock was selling for \$103 in 1970 and subsidiary stock was bought for \$1/share, the exchange of stock represented a tremendous potential return. Depending on the value of PC&D's stock at the time of merger, the net worth of the entrepreneurs who originally invested in the subsidiary multiplied overnight. Indeed, as subsidiaries were merged in ensuing years, typical gains ranged from 100 to 200 times the original investments in the entrepreneurial subsidiary. For example, PC&D exercised its option to merge Pro Instruments when its product was brought to market in 1972. Grennan, who had bought 6,000 shares of Pro Instruments stock, found his 6,000 shares of PC&D valued at \$936,000 (PC&D common selling for \$156 on the New York Stock Exchange at the time). By the end of 1974, Pro Instruments' new product had earned \$50 million in revenue and \$4.8 million in profits, thus qualifying the original entrepreneurs for stock bonuses. Grennan received another 4,200 shares valued at \$684,600. Thus, in four years, he had earned about \$1.6 million on a \$6,000 investment.

By setting up entrepreneurial subsidiaries, like Pro Instruments, Martell had several expectations. In the process of setting up a subsidiary with the dynamics of a small, independent group, Martell hoped to create the loyalty, cohesion, and informal structure conducive to successful R&D efforts. The subsidiary would have a separate location and its own officers who decided structure and operating policies. Further, it provided the opportunity to buy into and reap the benefits of ownership in the equity of a company. Martell spoke:

I think the concept of the entrepreneurial subsidiaries was the outgrowth of the insight that in many industrial corporations the system of rewards is perhaps inverted from what many people think it should be; that the hierarchy of the institution commends itself to those people who are capable of managing other people's efforts, and those people at lower echelons who are unusually creative and who, as a result of their creativity and innovation and daring in the technical sense or perhaps in a marketing sense, are unusually responsible for the accomplishments of the business, are very frequently forgotten about in the larger rewards of the enterprise.

I, on the other hand, recognized that such persons are frequently, perhaps by training, inclination or otherwise, not capable of marshalling the financial resources or organizing the manufacturing and marketing efforts required to exploit their creativity. Without the kind of assistance that PC&D was capable of lending to them—an assured marketing capability was often a key concern—they are wary of undertaking new ventures.

Further, it was Martell's opinion that the organizational and incentive structure of the entrepreneurial subsidiary would attract the best engineers from older, more secure firms to PC&D—the so-called wild ducks.

More important, Martell hoped to encourage the timely development of new products with minimal initial investment by PC&D. If Pro Instruments, for example, did not meet its timetable with the original money invested, its officers would have to approach PC&D for new money just as if they were an outside company. PC&D would then have multiple opportunities to review and consider the investment. If the entrepreneurial subsidiary failed or could not get more money from the parent, PC&D was under no obligation to keep the company alive or to rehire its employees. If loans were involved, PC&D could act as any other creditor. Martell observed: "The benefit to PC&D

shareholders was in the rapid expansion of PC&D's products, the size of the company, the ability of the company to compete in the marketplace in a way which PC&D, dependent upon only internal development projects, could never have achieved, or could have achieved only at much greater costs and over a longer period of years."

Martell believed that the stock incentives would properly reward the genius of creative engineers for the service performed, however, without having to pay high salaries over a long potentially unproductive period after the initial product was developed. Employees did not have to be rehired, nor were they obligated to continue employment, even if the subsidiary was merged. Those who were rehired would be paid at the normal salary levels of comparable people at PC&D. Martell's reasoning here centered on the following points:

There were two criteria for establishing an entrepreneurial subsidiary. The first criterion was that the R&D objectives of the subsidiary could not be reached except under the aegis of the subsidiary, because it involved people who were not involved in PC&D's main lines of business.

The other criterion was that considerable career risk must exist for the people who would leave their established positions within the management structure of PC&D to undertake the entrepreneurial venture of the new subsidiary. Also, the people, in some part, had to be new talent who came from outside PC&D. When I refer to career risk, I mean for example that if a director of engineering at PC&D left his or her post to join an entrepreneurial subsidiary, a new director of engineering would be appointed, and given the lack of success of the entrepreneurial subsidiary, there would in effect be no position of director of engineering to which the person could return. Moreover, it is probable that we would not want the individual to return.

The stock incentive also motivated the engineers to produce without having to commit any resources of the parent company for the future, since the corporation was not required to merge the subsidiary or to produce and market the new product. The incentive kicker, moreover, would insure quality. A product that was rushed through development would be more likely to have problems and not reach revenue goals.

Another advantage of the entrepreneurial subsidiary was its effect on decision making. Without the need to go through the entire corporate hierarchy, decisions would be made closer to the operating level. This would enhance the quality of decisions because managers performed best, according to Martell, when given objectives and resources from top managers but were left with operating decisions unfettered.

Finally, Martell expected that the entrepreneurial subsidiary would be the training and proving ground of PC&D's future top managers. By providing the means for these executives to gain great personal wealth, Martell expected to gain their loyalty and continued efforts for both himself and PC&D.

PC&D, 1970-1975

During the first five years of Martell's presidency, PC&D's growth was quite impressive. With revenues topping the billion dollar mark in 1975, growth had averaged about 15% in revenues and 35% in profits after tax during the five years (see Exhibits 7 and 8 for financials). Such growth had been achieved, to a large extent, from new products developed in entrepreneurial subsidiaries. In

1975 sales of \$179.2 million and profit before taxes and interest of \$22.1 million came from these new products.¹ All together, 11 entrepreneurial subsidiaries had been organized during the 1970-1975 time frame. Of these, 4 had successfully developed products and had been merged into PC&D—1 in 1972, 1 in 1973, and 2 in 1974. The other seven were younger and their work was still in process; to date, none had failed.

Most subsidiaries grew out of needs of the Electronics Division or Pro Instruments. Competitors in the electronics equipment industry were beginning to integrate backward, thus lowering costs by producing their own semiconductors. The need to remain cost competitive caused PC&D to establish entrepreneurial subsidiaries to develop specialized components, including semiconductors, assuming that these could be used both by PC&D and sold in outside markets. In the process of selling semiconductors to outside customers, ideas for new products using PC&D components were stimulated, and new subsidiaries were formed to develop these equipment products. The cost of merging the two types of subsidiaries—components or equipment—however, differed. Equipment subsidiaries were cheaper because they could share the already existent sales force of the Electronics Division; many parts could be standard ones already utilized in other products; and the processes were similar to other Electronics products. But with semiconductors, new plant, new sales channels, new manufacturing processes, and new skills at all levels had to be built. Although Martell thought the move into semiconductors promised a large cash flow in the future in a booming industry, some in the company were concerned that the cash drain was not the best use of scarce cash resources.

When Martell first became president, he made few changes in PC&D's organization structure. McElroy continued as vice president of the Machinery Division and retained control over that division's structure and policies. Martell himself retained his responsibilities as manager of the Electronics Division. This he did reluctantly and with all intentions of finding a new executive for the job; however, the unexpected nature of his promotion left Martell without a ready candidate.

As the subsidiaries were merged, beginning with Pro Instruments in 1972, questions of organization began to rise. In typical fashion, Martell wanted to pass involvement in these decisions down to the appropriate managers. There was also no question that Pro Instrument's president, Grennan, had proven himself with the new subsidiary. Therefore in 1972 Martell appointed Grennan to division vice president, Electronics, based on Grennan's superlative performance. Further, because the products were complementary, all of the subsidiaries merged during this period were placed in the Electronics Division. Moreover, in recognition of the increased number of products, Grennan reorganized the Electronics Division. He appointed his Pro Instruments colleague, Bert Rogers, to be director of research which was organized by product area. Manufacturing, also organized by product, reflected the development by subsidiary as well. Marketing, on the other hand, was organized by region as it had been previously. Until they were merged, however, subsidiary presidents reported directly to Martell for resolution of problems that arose (see Exhibit 9 for a 1975 organization chart).

By 1975 the Electronics Division's enlarged marketing and production departments employed 4,000 people with production plants in three different locations. Electronics then had sales of \$561.4 million as compared to Machinery's \$440.6 million.

Although successful development projects from subsidiaries had been largely responsible for the sales growth at PC&D, this result had not come without costs. First, the subsidiaries required funds—\$60 million by the end of 1975. Some of these funds came from retained earnings, but much was new money raised in the form of long-term debt. Further, stock issued to capitalize subsidiaries and pay bonuses to entrepreneurs had a diluting effect on PC&D's shares. If all subsidiaries were merged and successful, the number of new shares could be significant. Although raising such a

¹Of PC&D's total assets in 1975, approximately 40% was devoted to the Machinery Division, 35% to the traditional Electronics Division, and 25% to the entrepreneurial subsidiaries.

sizable amount of new funds was not particularly difficult for a company as large as PC&D, the needs arising from the subsidiaries left little new money for the core businesses of PC&D. The Machinery Division, for example, had not had their development budget increased at all during the 5 years ending 1975.

Further Concerns

Despite PC&D's successes, Martell was not without worries—several problems had appeared in both the Electronics and Machinery Divisions. In Electronics, personnel and products originating in subsidiaries now equalled or surpassed those from the original division. It had been part of the strategy of the entrepreneurial subsidiaries to use them as devices to attract talent from other firms. A key researcher hired from outside was encouraged to hire, in turn, the best of his or her former colleagues. Thus, the loyalty and friendships between key entrepreneurs and their staffs were often strong and long-standing. As the entrepreneurial subsidiaries were merged, their personnel tended to retain this loyalty to the president or key officers of the old subsidiary rather than transferring it to PC&D. Thus, several warring spheres of influence were developing in the division, particularly in the research department and between research and other departments. Martell was concerned that such influences and warring would lead to poor decisions and much wasted energy in this division.

Turnover in Electronics was also increasing. This was of particular concern to Martell for it was those talented engineers that the entrepreneurial subsidiaries were meant to attract who were beginning to leave. For example, Elaine Patterson, formerly of Pro Instruments, left during 1975 to start her own company, taking 20 research engineers with her. The source of the turnover was unclear but possible factors included distaste for the kind of warring atmosphere mentioned above and the inability to be a part of a large corporate R&D department with its demand for budgets and reports.

For many employees, however, the sudden absence of monetary incentives changed the climate drastically. This lack of incentive, coupled with the discovery that the most challenging projects were taken on by newly formed subsidiaries, which favored hiring outside expertise, caused dissatisfaction. For Martell, such turnover was of greatest concern in the long run, for the inability to create a strong central R&D department in Electronics created a continuing need for more entrepreneurial subsidiaries. These subsidiaries were still too new an idea for Martell to want to risk his entire future R&D program on their successes. Further, most of the new products were in highly competitive areas. Without continuing upgrades these products would soon become obsolete. A strong central R&D department was needed for follow-up development of products started by subsidiaries.

Finally, Martell was concerned by indications of serious operating problems in the Electronics Division. This was particularly disturbing since Martell had placed complete faith in Grennan's managerial ability. The most recent cost report, for example, indicated that the division's marketing, G&A, and engineering expenses were way out of line. Further, the marketing and production departments reported problems in several products originating in the subsidiaries. One product, with expected obsolescence of four years, now showed a six-year break-even just to cover the engineering and production costs. Another product, completing its first year on the market, had been forecasted by the subsidiary to achieve \$20 million in sales in its first two years. During the first 6 months, however, losses had been incurred because of customer returns. A report on the causes of the returns showed a predominance of product failures. The chances for break-even on this product looked bleak. While none of these problems had affected operating results to date, Martell was especially concerned that these operating problems would have a negative impact on 1976 first-quarter earnings.

Martell had not confronted Grennan with these operating problems. He wanted to see how the division itself was attacking these issues through its long-range plan. Martell had requested Grennan to prepare a long-range plan (five years) as well as the usual one-year operating plan. The product of this effort had just arrived (February 1976) and Martell had not had a chance to study it.

Its 100-page bulk loomed on Martell's desk. Quick perusal had indicated four pages of prose scattered through the plan, and dozens of charts, graphs, and tables of numbers, every one of which manifested an upward trend. (The report's table of contents is reproduced as Table A.)

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In an attempt to get employee feedback on all of these problems, Martell contracted an outside consulting firm to carry out confidential interviews with personnel in the Electronics Division. The interviews found middle managers quite concerned over the confusion in the division which was causing a loss of morale there. The consultant's report cited concrete problems, including lost equipment, missed billings, and confusion in the plant. Typical comments from lower-level personnel included the following:

Either upper management is not being informed of problems or they don't know how to solve them.

Morale is very poor, job security is nil.

There is little emphasis on production efficiencies.

Scrap is unaccounted for.

Market forecasts are grossly inaccurate.

Production schedules have a definite saw-tooth pattern. There is very little good planning.

There are no systematic controls.

These were not the sort of comments Martell expected from the division responsible for the major portion of PC&D's future growth. His concern was not so much the problems themselves, but what was being done about them. His preferred policy was to stay out of day-to-day operating problems. He wondered how long it was prudent to allow such problems to continue without some intervention on his part.

Meanwhile, the Machinery Division had its own problems. The last major construction of new plant had been in the early 1950s. Since that time, McElroy had upgraded production methods, which succeeded in checking rising costs. Since 1965, however, resources for such improvements had not been increased, and with inflation in the 1970s less and less could be done on a marginal basis. McElroy believed that capacity was sufficient for the short term, but that it was impossible to remain state of the art.² Indeed, the Machinery Division's products were beginning to fall behind the new developments of competitors, and the costs of Machinery's products were beginning to inch up. As the production line aged, quality control reported an increasing percentage of defective goods. In contrast to the situation in Machinery, the rather extensive investment in new plant for the production of semiconductors did not sit too well with McElroy, who was concerned with the lack of flexibility that could result from backward integrating. He thought component needs should be farmed out to the cheapest bidder from the numerous small component firms. Martell was concerned with how long he could keep McElroy satisfied without a major investment in Machinery and how long he could count on the cash flow from Machinery for other users.

Turnover, a problem never before experienced in the Machinery Division, had also appeared. Here, however, it was the salespeople who were leaving. Martell worried about this trend, for the sales force was the division's strength. According to the head of marketing, the salespeople considered themselves the best in the industry, and they did not wish to sell products that were not the best. They saw Machinery's products as no longer the best in quality nor state of the art. Further, they did not wish to work for a company where they felt unimportant. Whether true or not, the sales force appeared less aggressive than it had in previous times.

² McElroy suspected that the Machinery Division would require an investment of \$100-\$125 million over two or three years to revitalize the product line and plant and equipment. McElroy believed that in the long term the return on this investment would match the division's historic ROI.

Martell was not overly surprised, therefore, when he received McElroy's letter, nor was he certain that some of McElroy's anger concerning the Electronics Division was not justified. Martell knew he had to do something about McElroy, as well as Grennan and the Electronics Division. He also had to decide whether entrepreneurial subsidiaries should continue to be part of PC&D's research and development strategy. Finally, all of Martell's decisions concerning the divisions and subsidiaries needed to be consistent with a strategy that would continue PC&D's growth.

Exhibit 1 Except per share data, Payson & Clark Co., Income Statements, 1956–1965 (\$ millions)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Sales	177.6	190.7	205.0	220.5	237.2	247.9	259.1	273.3	288.1	302.7
COGS	<u>136.1</u>	<u>145.8</u>	<u>157.6</u>	<u>171.0</u>	<u>184.4</u>	<u>192.4</u>	<u>202.1</u>	<u>218.7</u>	<u>230.8</u>	<u>243.6</u>
Gross profit	41.5	44.9	47.4	49.5	52.8	55.5	57.0	54.6	57.3	59.1
Depreciation	5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5
Marketing and G&A	18.2	19.7	20.5	22.2	25.6	27.5	28.4	28.0	30.0	33.3
Eng. & product dev.	<u>8.1</u>	<u>8.6</u>	<u>9.9</u>	<u>10.1</u>	<u>10.6</u>	<u>11.0</u>	<u>11.4</u>	<u>8.8</u>	<u>9.2</u>	<u>7.1</u>
Total expenses	31.3	33.3	35.4	36.3	40.2	42.5	43.8	40.8	42.7	43.9
NBIT	10.2	11.6	12.0	13.2	12.6	13.0	13.2	13.8	14.6	15.2
Interest	<u>3.0</u>	<u>4.0</u>	<u>4.0</u>	<u>4.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>
Profit before tax	7.2	7.6	8.0	9.2	9.6	10.0	10.2	10.8	11.6	12.2
Tax	<u>3.6</u>	<u>3.8</u>	<u>4.0</u>	<u>4.6</u>	<u>4.8</u>	<u>5.0</u>	<u>5.1</u>	<u>5.4</u>	<u>5.8</u>	<u>6.1</u>
Profit after tax	3.6	3.8	4.0	4.6	4.8	5.0	5.1	5.4	5.8	6.1
EPS	\$1.29	\$1.36	\$1.44	\$1.65	\$1.72	\$1.80	\$1.83	\$1.94	\$2.08	\$2.19
Avg. stock price	\$18	\$22	\$19	\$30	\$29	\$29	\$27	\$31	\$35	\$33

Exhibit 2 Payson & Clark Co., Balance Sheets 1956–1965, (\$ millions)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Assets										
Cash & securities	6	7	3	1	2	2	2	1	1	1
Accounts receivable	33	36	38	39	41	43	45	47	51	55
Inventories	<u>56</u>	<u>61</u>	<u>64</u>	<u>66</u>	<u>69</u>	<u>74</u>	<u>78</u>	<u>82</u>	<u>88</u>	<u>91</u>
Total current assets	95	103	105	106	112	119	125	130	140	147
Plant & equipment	65	60	60	61	63	67	65	65	64	65
Investments in joint ventures	—	—	—	—	—	—	<u>5</u>	<u>10</u>	<u>11</u>	<u>14</u>
Total assets	160	163	165	167	175	186	195	205	215	226
Liabilities & Net Worth										
Accounts payable	31	33	36	38	46	54	62	65	70	75
Accrued liabilities	7	9	10	11	13	17	22	25	31	36
Long-term debt due	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>
Total current liabilities	44	48	52	55	65	77	86	96	107	117
Long-term debt	<u>52</u>	<u>47</u>	<u>41</u>	<u>35</u>	<u>29</u>	<u>23</u>	<u>18</u>	<u>12</u>	<u>6</u>	<u>—</u>
Total liabilities	96	95	93	90	94	100	104	118	113	117
Common stock	27	27	27	27	27	27	27	27	27	27
Retained earnings	37	41	45	50	54	59	64	70	75	82
Total liabilities & net worth	160	163	165	167	175	186	195	205	215	226

Exhibit 3 Except per share data, Datronics Company, Income Statements, 1956-1965 (\$ millions)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Contracts	1.2	6.4	8.2	7.5	8.0	7.9	6.0	4.3	3.4	2.4
Sales	—	—	<u>.2</u>	<u>2.1</u>	<u>4.4</u>	<u>8.1</u>	<u>14.3</u>	<u>22.5</u>	<u>34.2</u>	<u>48.1</u>
Revenues	1.2	6.4	8.4	9.6	12.4	16.0	20.3	26.8	37.6	50.5
COGS	<u>1.0</u>	<u>4.5</u>	<u>6.0</u>	<u>6.9</u>	<u>8.9</u>	<u>11.5</u>	<u>14.7</u>	<u>19.6</u>	<u>27.8</u>	<u>37.9</u>
Gross profits	.2	1.9	2.4	2.7	3.5	4.5	5.6	7.2	9.8	12.6
Expenses	.5	.6	.7	.7	.7	.7	.9	.9	1.0	1.1
R&D	—	<u>.7</u>	<u>.8</u>	<u>1.0</u>	<u>1.2</u>	<u>1.5</u>	<u>2.2</u>	<u>3.0</u>	<u>4.0</u>	<u>5.1</u>
Profit before tax	(.3)	.6	.9	1.0	1.6	2.3	2.5	3.3	4.8	6.4
Tax	<u>(.15)</u>	<u>.2</u>	<u>.4</u>	<u>.5</u>	<u>.8</u>	<u>1.1</u>	<u>1.2</u>	<u>1.6</u>	<u>2.4</u>	<u>3.2</u>
Net profit	<u>(.15)</u>	<u>.4</u>	<u>.5</u>	<u>.5</u>	<u>.8</u>	<u>1.2</u>	<u>1.3</u>	<u>1.7</u>	<u>2.4</u>	<u>3.2</u>
Earnings per share	(\$1.50)	\$4	\$5	\$5	\$8	\$12	\$10.40	\$13.60	\$19.20	\$25.60

Exhibit 4 Datronics Company, Balance Sheets, 1956-65 (\$ millions)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Assets										
Cash	.05	.10	.10	.40	.20	.60	.60	.65	1.56	.70
Inventories	.20	2.60	2.70	3.70	5.20	6.20	6.80	10.15	15.22	20.10
Accounts receivable	—	<u>.30</u>	<u>.50</u>	<u>1.00</u>	<u>2.00</u>	<u>2.20</u>	<u>3.00</u>	<u>4.00</u>	<u>5.12</u>	<u>6.00</u>
Total current assets	.25	3.00	3.30	5.10	7.30	9.00	10.40	14.85	21.90	26.80
Plant & equipment	<u>.50</u>	<u>1.00</u>	<u>1.20</u>	<u>1.40</u>	<u>2.00</u>	<u>3.10</u>	<u>5.10</u>	<u>7.50</u>	<u>8.50</u>	<u>9.00</u>
Total assets	.75	4.00	5.50	6.50	9.30	12.10	15.50	22.35	30.40	35.80
Liabilities & Net Worth										
Accounts payable	.10	2.15	2.20	2.60	3.65	4.75	5.50	8.78	12.10	14.25
Accrued liabilities	<u>.10</u>	<u>1.00</u>	<u>1.05</u>	<u>1.25</u>	<u>1.65</u>	<u>2.25</u>	<u>1.70</u>	<u>2.77</u>	<u>3.80</u>	<u>3.85</u>
	.20	3.15	3.25	3.85	5.30	7.00	7.20	11.55	15.90	18.10
Notes payable	<u>.60</u>	<u>.50</u>	<u>1.40</u>	<u>1.30</u>	<u>1.85</u>	<u>1.75</u>	<u>2.50</u>	<u>2.20</u>	<u>3.50</u>	<u>3.50</u>
Total liabilities	.80	3.65	4.65	5.15	7.15	8.75	9.70	13.75	19.45	21.60
Additional paid-in capital	—	—	—	—	—	—	1.125	2.225	2.225	2.225
Common stock (\$1 par)	.10	.10	.10	.10	.10	.10	.125	.125	.125	.125
Retained earnings	<u>(.15)</u>	<u>.25</u>	<u>.75</u>	<u>1.25</u>	<u>2.05</u>	<u>3.25</u>	<u>4.55</u>	<u>6.25</u>	<u>8.65</u>	<u>11.85</u>
Total liabilities & net worth	.75	4.00	5.50	6.50	9.30	12.10	15.50	22.35	30.40	35.80

Exhibit 5 Except per share data, PC&D, Inc., Income Statement, 1966-1970 (\$ millions)

	1966	1967	1968	1969	1970
Sales					
Machinery	315.1	327.5	340.2	354.1	368.2
Electronics	<u>66.1</u>	<u>84.7</u>	<u>106.7</u>	<u>132.3</u>	<u>161.4</u>
Total	381.2	412.2	446.9	486.4	529.6
COGS					
Machinery	251.7	264.3	271.8	284.7	297.9
Electronics	<u>49.6</u>	<u>63.0</u>	<u>79.6</u>	<u>96.8</u>	<u>118.5</u>
Total	301.3	327.3	351.4	381.5	416.4
Gross margin	79.9	84.9	95.5	104.9	113.2
Expenses					
Marketing G&A expense	46.1	48.3	50.3	51.6	53.1
Product dev.—mach.	6.9	4.6	4.7	4.1	4.5
R&D—elec.	<u>4.2</u>	<u>5.3</u>	<u>10.3</u>	<u>17.8</u>	<u>27.3</u>
Total	52.2	58.2	65.3	73.5	84.9
NBIT	24.7	26.7	30.2	31.4	28.3
Interest	3.0	3.0	0.2	0.2	0.2
Profit before tax	21.7	23.7	30.0	31.2	28.1
Taxes	10.8	11.8	15.0	15.6	14.0
Net profit	10.9	11.9	15.0	15.6	14.1
Earnings per share	\$3.63	\$3.97	\$5.00	\$5.20	\$4.70
Avg. stock price	\$94	\$111	\$145	\$146	\$103

Exhibit 6 PC&D, Inc., Balance Sheets, 1966-1970 (\$ millions)

	1966	1967	1968	1969	1970
Assets					
Cash & securities	2	5	9	7	11
Accounts receivable	67	71	77	87	101
Inventories	<u>118</u>	<u>128</u>	<u>145</u>	<u>166</u>	<u>180</u>
Total current assets	187	214	231	260	292
Plant & equipment	83	95	97	108	120
Investments in joint ventures	10	11	12	12	10
Goodwill	<u>6</u>	<u>6</u>	<u>5</u>	<u>5</u>	<u>5</u>
Total assets	286	320	345	385	427
Liabilities & Net Worth					
Accounts payable	90	96	103	111	127
Accrued liabilities	31	33	31	32	35
Long-term debt due	<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>
Total current liabilities	122	130	135	145	165
Long-term debt	<u>16</u>	<u>30</u>	<u>35</u>	<u>49</u>	<u>57</u>
Total liabilities	138	160	170	194	222
Common stock & paid-in capital	55	55	55	55	55
Retained earnings	93	105	120	136	150
Total liabilities & net worth	286	320	345	385	427

Exhibit 7 PC&D, Inc., Income Statements, 1971–1975 (\$ millions, except per share data)

	1971	1972	1973	1974	1975
Sales					
Machinery	382.9	397.8	412.5	426.9	440.6
Electronics ^a	<u>193.6</u>	<u>235.6</u>	<u>300.1</u>	<u>397.4</u>	<u>561.4</u>
Total	576.5	633.4	712.6	824.3	1002.0
COGS					
Machinery	311.3	322.6	338.2	350.9	359.1
Electronics	<u>145.2</u>	<u>174.3</u>	<u>216.1</u>	<u>282.2</u>	<u>421.1</u>
Total	456.5	496.9	554.3	633.1	780.2
Gross Margin	120.0	136.5	158.3	191.2	221.8
Expenses					
Marketing G&A expense	54.7	56.3	59.1	63.3	67.7
Development—mach.	5.0	5.1	5.2	5.2	5.3
R&D—elec.	<u>28.4</u>	<u>29.5</u>	<u>30.7</u>	<u>31.9</u>	<u>33.5</u>
Total	88.1	90.9	95.0	100.4	106.5
Profit & taxes					
Before interest	31.9	45.6	63.3	90.8	115.3
Interest	0.2	3.0	3.0	7.0	11.0
Profit before tax	31.7	42.6	60.3	83.8	104.3
Taxes	15.8	21.3	30.1	41.9	52.1
Net profit	15.9	21.3	30.2	41.9	52.2
EPS	\$5.30	\$6.45 ^b	\$8.39	\$10.47	\$13.05
Avg. stock price	\$106	\$156	\$158	\$163	\$238

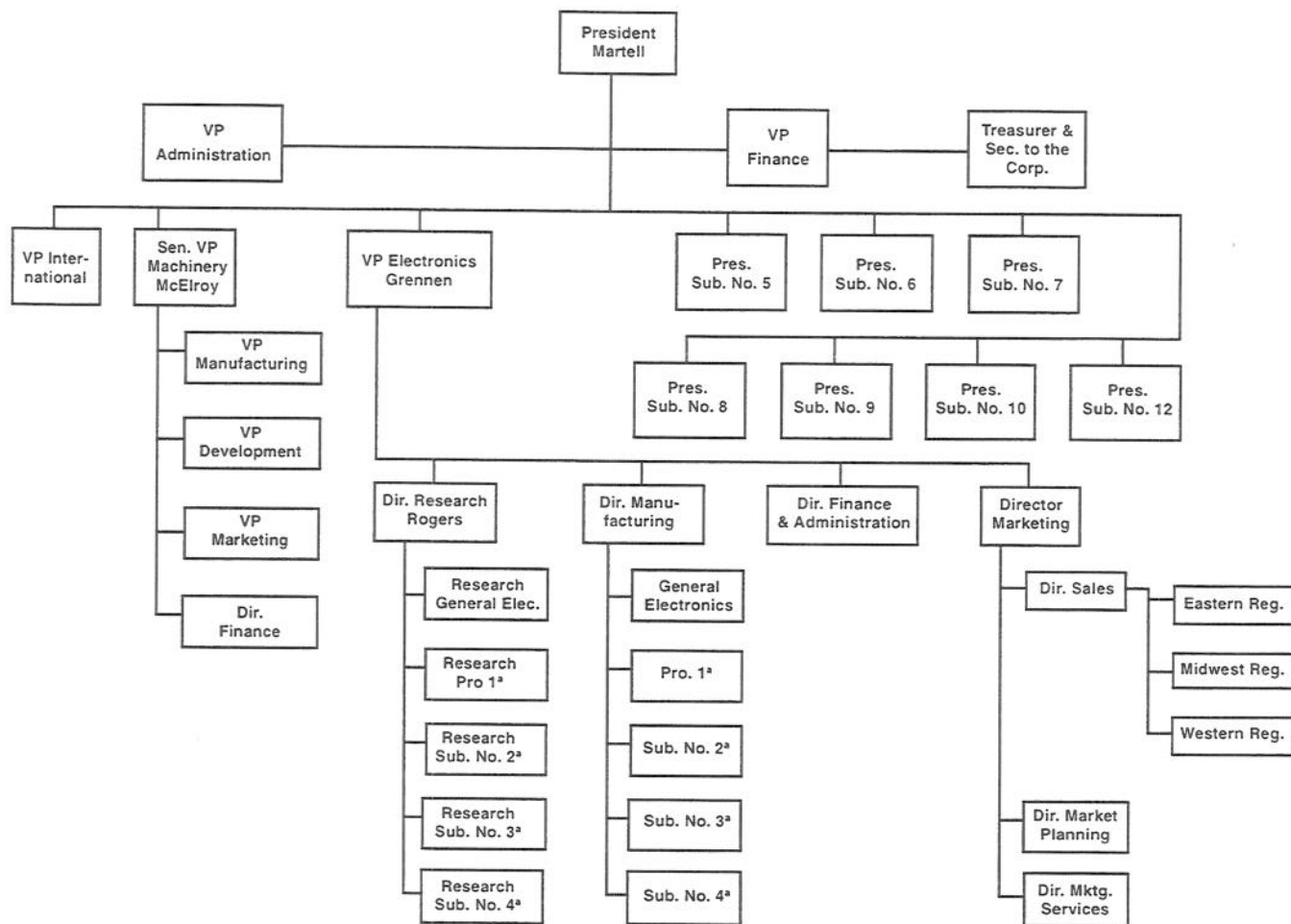
^a Sales figures for Electronics included both sales by the original division plus sales of new subsidiaries after they are merged. Thus in 1975, the \$561.4 million in sales for Electronics included \$179.2 from products developed in subs. Profit before interest and taxes from new products was \$22.1 million.

^b Number of shares increased in 1972 by .3 million from the merger of Pro Instruments. They increased in 1973 by .3 million from merger of Sub #2, and again by .4 million in 1974 from the merger of Subs #3 and #4. Thus in 1974 there was a total of 4 million shares outstanding. In late 1973, there was a secondary offering of 1 million shares.

Exhibit 8 PC&D, Inc., Balance Sheets, 1971-1975 (\$ millions)

	1971	1972	1973	1974	1975
Assets					
Cash & securities	10	5	2	2	3
Accounts receivable	117	131	155	171	213
Inventories	<u>200</u>	<u>223</u>	<u>270</u>	<u>327</u>	<u>401</u>
<i>Total current assets</i>	327	505	586	706	882
Plant & equipment	122	124	125	178	232
Investments in joint ventures	10	8	10	9	6
Investments in subsidiaries	5	10	21	16	25
Goodwill	4	4	3	3	2
<i>Total assets</i>	468	505	586	706	882
Liabilities & Net Worth					
Accounts payable	151	160	179	193	243
Accrued liabilities	37	41	46	51	65
Long-term debt due	<u>4</u>	<u>4</u>	<u>4</u>	<u>6</u>	<u>7</u>
<i>Total current liabilities</i>	192	205	229	250	315
Long-term debt	55	58	84	138	193
<i>Total liabilities</i>	247	263	313	388	508
Common stock & paid-in capital	55	55	56	57	57
Retained earnings	<u>166</u>	<u>187</u>	<u>217</u>	<u>261</u>	<u>317</u>
<i>Total liabilities & net worth</i>	468	505	586	706	882

Exhibit 9 Organization Chart, 1975



^a Reference to subsidiaries indicates origin of personnel and product.



UNIVERSITY OF PENNSYLVANIA

THE WHARTON SCHOOL

MGMT 239 PKG. 2

Professor Lafkas

Spring 1999

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Asahi Glass Company: Diversification Strategy

Asahi Glass Company (Asahi Glass), founded in 1907, was the oldest and largest glass manufacturer in Japan and a prominent member of the prestigious Mitsubishi Group. After establishing a leading position in the domestic glass industry, the company gradually expanded its range of businesses and its geographic scope through internal growth, acquisitions, and joint ventures. By 1992, Asahi Glass had become a multibusiness, multinational company with consolidated sales exceeding ¥1.3 trillion (\$10.5 billion), of which 23% were outside Japan (Exhibit 1).

President Hiromichi Seya and other top management of Asahi Glass believed that the company was at a critical juncture in 1993. Adversely affected by Japan's recession, the company's sales had leveled off and net income had dropped in the previous three years. More fundamentally, the company faced a number of vital issues. Its original domestic glass business had matured, while the rapid globalization of its activities into Europe and North America challenged its management practices. The company's diversification into electronics-related business had not met expectations. In the meantime, other opportunities such as "new glass" were appearing on the horizon. In order to continue its pattern of profitable growth into the twenty-first century, top management had to plan Asahi Glass's future diversification path carefully.

Company History

From Start-up to World War II

Asahi Glass Company was established by Toshiya Iwasaki, a former chemistry student and nephew of the founder of the Mitsubishi business group (Exhibit 2). Strongly committed to contributing to Japan's industrial success, Iwasaki set himself the goal of establishing a domestic flat (or sheet) glass industry in order to reduce Japan's reliance on imports. Although others, including the government, had failed to manufacture glass commercially, Iwasaki's "pioneer spirit" and "mission to succeed" took on the challenge, and left a lasting legacy in the corporate culture. Having imported the technology, skilled craftsmen and raw materials from Belgium, Asahi began sheet glass production in 1909. It became Japan's first successful sheet glass manufacturer when in 1912 it made its first profit—a feat not replicated by a competitor until 1920, when a startup by the Sumitomo group succeeded in the mass production of sheet glass, licensing technology from America. Asahi Glass thus established a dominant position in the domestic market.

Doctoral Candidate Tomo Noda prepared this case under the supervision of Professor David J. Collis as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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Because Japan's economy was still in its infancy, Asahi Glass relied heavily on European soda ash and refractory bricks. When difficulties importing these raw materials arose during the First World War, Asahi Glass began making them in-house. The company later began selling refractory bricks and soda ash to other high-heat furnace users such as steel and cement producers and to chemical companies, respectively. Later, in order to exploit scope economies in raw material usage, Asahi Glass began using raw salt to produce caustic soda (an alkali) in addition to soda ash (Exhibit 3). Therefore, although the vast majority of its revenue still came from glass, Asahi Glass developed technological expertise in ceramics and alkali chemicals.

From World War II to the Oil Crises

As the Japanese economy recovered following World War II and then grew rapidly during the 1950s and 1960s, demand for glass and other construction materials exploded. Since Asahi Glass' three domestic glass plants had survived the war, the company was well-positioned to exploit the boom in demand. Indeed the major strategic problem during this period was ensuring that the factories could produce sufficient volume of high quality output to meet demand. The rapid growth of the market attracted a new entrant, supported by the Mitsui group, in 1958. A triopoly then emerged in the domestic flat glass market, with Asahi Glass as the leader.

Flat glass technology changed dramatically in the late 1950s when Pilkington Brothers, a major U.K. glass manufacturer, invented the float glass process. This revolutionary technology involved floating molten glass over the surface of molten tin, and annealing it into a strip of sheet glass. Gravity, acting on the upper surfaces of both the tin and the glass, ensured that both sides of the sheet were perfectly flat (Exhibit 4). Because of its technological superiority, all the major glass manufacturers in the world, including Asahi Glass, licensed the float process from Pilkington to preserve their market positions.

The fast-growing television set and automobile industries also boosted postwar demand for glass in Japan. Licensing technologies from Corning Glass Works, Asahi Glass started the production of TV glass bulbs in 1954. It then entered the fabricated automobile (safety) glass business in 1956 drawing on its own technological expertise. By the end of the 1960s, Asahi Glass established the leading domestic position in these two markets.

In the meantime, searching for additional high volume opportunities, the company entered into other glass-related businesses. It relied on a Japanese engineer who was sent to live in the United States to gather information. In 1956, it set up a joint venture with Owens-Corning Fiber Glass Corp. to start the production of glass fiber in Japan. In 1964, the company strengthened its borosilicate-glass business (for automobile headlight glass, laboratory ware, and heat-resistant, glass houseware) by inviting the equity participation of Corning Glass Works in its subsidiary, Iwaki Glass, in return for Corning's technology.

Asahi Glass also entered the construction materials business. The company already had a strong brand identity within the construction industry, and its wholesalers dealt directly with many builders. Licensing technology from a Swedish firm, Asahi Glass began producing and marketing ALC (autoclaved lightweight cement) in Japan in 1962. In 1973, it started the production of GRC (glass reinforced cement) with technology licensed from Pilkington Brothers.

Like its glass business, Asahi Glass' chemical business rapidly added new products and markets after the war. Because of the existence within the Mitsubishi group of Mitsubishi Kasei, which produced organic chemicals, Asahi Glass initially stuck to alkali and other inorganic chemicals. When a petrochemical industry emerged in Japan in the late 1950s, the company also eschewed becoming a producer of basic petrochemicals such as ethylene and propylene to avoid competition with Mitsubishi Petrochemical. Instead, Asahi Glass focused on alkalis and halogen elements (fluorine, chlorine, bromine, and iodine) as well as their petrochemical additives.

After WWII, Asahi Glass began producing caustic soda using a mercury electrode to perform electrolysis on salt water. Electrolysis not only produced very pure caustic soda, it also yielded chlorine as a by-product (**Exhibit 3**). Combining chlorine with basic petrochemicals, Asahi Glass started the production of propylene oxide and propylene glycol in 1961, and then established a joint venture with PPG Industries to produce vinyl chloride monomers and chlorinated solvents in 1966. Combining chlorine with natural gas (methane) available near its caustic soda factory, Asahi Glass also began producing chloromethane, which was then used to move into the production of higher value-added chlorofluorocarbons (CFCs). Having developed new applications and new markets for its products, Asahi Glass became a leader in a number of specialty product markets, and secured a unique position in the domestic chemical industry.

Throughout this period, Asahi Glass set growth as its primary objective. Top management allowed the divisions to explore new product and geographic market opportunities on the basis of their technological expertise, without obligation to adhere to a given strategic direction.

From the Oil Crises through the Early 1990s

By the early 1970s, Asahi Glass' glass and construction materials business accounted for more than 50% of total revenue, and the chemical business for about 40%. Although revenue growth had fallen short of management's expectations, profits, which mostly came from the company's leading position in the domestic flat glass market and several niche chemical markets, averaged three times those of the Japanese manufacturing industry.

The two oil crises in the 1970s, however, cast a shadow on the future of the company. As the Japanese economy shifted into a more modest expansion phase, the growth of its basic materials businesses slowed (**Exhibit 5**). Concerned about this trend, then-president Takeo Sakabe decided in the mid 1970s to begin building an electronics business as the company's "fourth pillar"—following glass, chemicals and ceramics.

Sakabe focused on electronics because of its growth potential and also because his management had some expertise in it. The company's first foray into the electronics business had been in the mid 1960s, when it formed a relationship with a subsidiary of Corning Glass Works to import and market integrated circuits (ICs). Even after Corning divested its semiconductor business, Asahi Glass continued to distribute ICs, finding new suppliers such as National Semiconductor and Oki Electric. Asahi Glass's other involvement with electronics was through its development of glass delay lines—electronic elements that improved TV picture quality by letting ultra-sound signals conduct through glass with some time lag in order to complement video signals. At the request of TV set manufacturers, Asahi Glass's TV glass bulb researchers started research on glass delay lines in 1970 and successfully developed its own technology in 1974.

Top management set a goal of developing electronics to generate 10% of the company's revenue within 10 years. They decided to focus resources on areas such as displays, optoelectronics and components for ICs, where they judged Asahi Glass had the relevant raw materials expertise or processing/fabricating knowledge. Among these areas, management particularly emphasized the development of liquid crystal displays (LCDs),¹ partly as a hedge against the substitution of LCDs for the TV glass bulb business. The company's research group began exploring LCD technology in 1970, and then participated in a cooperative research project sponsored by the Ministry of International Trade and Industry (MITI). Empowered by top management's strategic decision, research was scaled up and led to the formation of a joint venture called Optrex in 1976, in which Asahi Glass owned 60% and Mitsubishi Electric 40%, to commercialize small-sized LCDs used as the displays in products

¹LCDs were made up of liquid crystals sandwiched between two glass substrates. The liquid crystals received a charge from an electronic driver to generate the display.

such as electronic calculators, digital wrist-watches, and automotive panels. Optrex soon became Japan's second largest manufacturer of LCDs, primarily supplying automobile manufacturers.

The Electronics Business Division was established as an independent division in 1982, and was later upgraded to a general division in 1989. In 1984, the company acquired controlling interests in Nippon Carbide Industries Co., and ELNA Co. Nippon Carbide's ceramics processing technology and ELNA's circuit board and aluminum capacitor technology were important for understanding electronics production, although ELNA in particular came with other businesses not necessarily appropriate for Asahi Glass. In addition, by hiring about 50 electrical engineers from the outside, the company established the Electronics Product Development Center at its Central Laboratory in 1985. Since acquisitions and head-hunting were uncommon in Japan, these aggressive moves attracted public attention to the company.

In 1987, Asahi Glass decided to expand its involvement in electronics. In response to an inquiry initiated by Komag Inc., a recently established manufacturer of thin-film disks in California, the company formed a joint venture. Asahi-Komag produced and marketed sputtered thin-film magnetic memory (hard) disks in Japan. Asahi Glass judged that its surface treatment expertise, developed in the glass business, could be applied to the production of disks. Also, it anticipated that glass instead of aluminum would be used as the base material for disks in the future. The joint venture contract was highly detailed in its treatment of technical issues. Small innovations were to be shared freely, "epoch-making" breakthroughs would be cross licensed, and both parties agreed to limitations on their activities if the venture dissolved. The first shipment from the new factory was made in 1987.

The company's quest for growth was not limited to electronics. In 1981, a new business division was established to develop the optical lens business. While Asahi Glass had been an OEM supplier of glass lenses, it decided to become a full-line provider of optical frames, glass and plastic lenses.

While seeking growth by entering these new businesses, Asahi Glass also attempted to strengthen its three traditional businesses by shifting from commodity products to specialty, value-added products. In order to strengthen its position as supplier of materials, the company also expanded into the selected areas of "processing" and "assembling" even though such downstream moves sometimes put the company in competition with its own customers.

In the glass and construction materials business, the company further enhanced the design, safety, and energy conservation qualities of its materials, and developed a number of new products including heat-reflective glass and high-insulating double-glazing glass units. In its chemical business, Asahi Glass developed a variety of specialty chemical products, such as foam urethane products for automobile bumpers and seats, fluorinated etching gases used in semiconductor fabrication, and fluoropolymer resins for weather resistant external paints.

Asahi Glass also maintained its lead in the domestic alkali chemical business by developing an ion-exchange membrane production process for caustic soda in 1975. The need for this arose when the government prohibited the use of the "mercury process" for caustic soda production after the "Minamata" mercury-poisoning disaster in 1973. Up to 100 engineers were committed to the development project, which combined Asahi Glass's skills in caustic soda production, fluorinated resins as a material for the membrane, and membrane technology itself to commercialize this state-of-the-art process technology. Later, the company applied the ion-exchange membrane technology to develop a hollow fiber membrane for dehumidifiers and hydrogen fuel cells.

The refractories business also evolved into a broader-scope ceramics business. Initially, Asahi Glass explored the possibility of developing temperature-, corrosion-, and wear-resistant ceramics for structural components such as car engines, heat exchangers, and radiators. It established a new division in 1982 to further promote such "structural" ceramics. Later, when a large market for

structural ceramics that could be demanded in large quantities failed to emerge, Asahi Glass switched to develop the "functional ceramics" that Kyocera had pioneered. Such functional products were made from fine ceramic compounds according to precise specifications, primarily for use in electronics.

Globalization

After losing its first overseas glass and soda ash plants in China as a result of WWII, Asahi Glass resumed foreign direct investment in 1956. The company accepted the invitation of the Indian government to build a local sheet glass plant primarily to supply the Indian market. It then established a flat-glass joint venture with local partners in Thailand in 1964 and in Indonesia in 1972. Both these plants focused on Southeast Asian markets, which were beyond the region of interest to the Western glass companies and protected by local governments. Asahi Glass's policy was to "co-exist" and "co-prosper" with these economies by developing their infant industry, substituting domestic production for imports, and creating employment. While Asahi Glass would send between five and ten Japanese employees to these affiliated plants to provide technical and marketing know-how along with financial support, it delegated all the daily operations to local managers and relied on its local partners for distribution.

Because of economies of scale in float glass production, by the late sixties, the world glass industry was dominated by a few giants, especially Pilkington in the U.K., Saint-Gobain and BSN in France, and PPG in the United States. The increasing automation of the float glass process made it possible for them to operate glass plants without highly skilled labor, so while these firms first entered neighboring regions through exports, increasingly they made foreign direct investments—the Europeans in Africa, Middle East and Latin America, the Americans in Central America—each establishing their own spheres of influence.

This equilibrium was disturbed in the early 1980s when BSN-Gervais Danone, a French conglomerate, decided to exit the glass business and divest its four unprofitable glass subsidiaries in France, Belgium, Netherlands, and Germany. Because of antitrust regulation, the Continental European glass manufacturers could not bid for the BSN plants. Instead, Pilkington purchased the German subsidiary, PPG purchased the French subsidiary, and Asahi Glass bought the Belgian (Glaverbel) and Dutch (MaasGlas) subsidiaries. Asahi Glass wanted to acquire the companies in order to learn the European market, access European R&D, and develop the African market. As with its other overseas operations, Asahi Glass retained the management of Glaverbel and MaasGlas and delegated most management decisions to them.

The company's automobile safety glass and TV glass bulb operations also globalized during the 1970s and 1980s as the Japanese automobile and consumer electronics manufacturers started transferring their production facilities, first to Asian countries and then later to the United States and Europe. Following the moves of its customers, Asahi Glass built overseas operations for TV glass bulbs in Singapore in 1979 and in Taiwan in 1980. In the U.S. market, it formed a joint venture with Corning Glass Works that took over the operation of Corning's TV glass bulb facilities in 1988. It also started fabricated automotive glass plants both in Thailand and Indonesia in 1974, and in the United States in 1985.

Similarly, Asahi Glass' chemical business pursued its own globalization strategy. The company started the production of caustic soda and chlorine first in Thailand in 1965. Later in 1989, it established an integrated operations for caustic soda, chloro vinyl monomers and polymers in Indonesia. Then in 1990, it formed a joint venture with Tenneco Minerals in the United States, its first chemical activity outside Asia, to mine natural soda ash for supply to its local glass plants as well as to outside customers.

Businesses in 1992

In 1992, 56% of Asahi Glass's sales came from glass and related products, 30% from chemicals, 6% from electronics, 2% from ceramics and refractories, and the remainder from other areas (Exhibits 6 and Exhibit 7).

Glass and Related Products

Three general divisions were responsible for Asahi Glass's glass and related businesses—including architectural glass for buildings, glass reinforced cement (GRC) and other construction materials, fabricated glass products for automobiles, and TV glass bulbs. Asahi Glass was not active in fiberoptic cable because in Japan the telecommunication and copper wire companies had won Corning licenses. Nor was Asahi Glass a manufacturer of specialty glass (like Corningware), except through its ownership of Iwaki Glass, because the company had historically sought high-volume industrial markets rather than small consumer markets.

Flat glass was the company's biggest generator of sales, and especially of profits. In Japan, Asahi Glass was the dominant supplier with about a 50% market share, followed by Nippon Sheet Glass and Central Glass, who held 30% and 20% of the market respectively (Exhibit 8). Nippon Sheet, specialized in glass and construction materials business, and was putting a new emphasis on fiber optics. Central Glass, the newest of the three competitors, operated alkali and other chemical businesses as well as glass production. The market shares of these companies had remained virtually unchanged since the mid 1960s.

Flat glass was almost exclusively made through the float process. The glass was then transported to wholesalers and dealers who stored, cut, and merchandised the glass directly to customers. In Japan, there were over 400 small-sized, independent wholesalers. Historically, these wholesalers had received financial and technical support from one of the three big manufacturers, and had developed a one-to-one relationship to deal only with that manufacturer. Such relationships were also seen in Europe, but were not common in the North American markets. Unlike wholesalers, most of the dealers did not have an exclusive relationship with a particular glass manufacturer and could buy from any manufacturer. Sixty percent of Japanese domestic flat glass production went into construction, 30% to automobiles and 10% to other industrial uses such as mirrors, display cases and furniture.

Worldwide, Asahi Glass competed with European and American rivals (Exhibit 9). Pilkington Brothers was a 100-year-old British glass manufacturer which had invented the epoch-making float process technology. In addition to its core glass business which generated 80% of its sales, it had diversified into ophthalmics (spectacle lenses, contact lenses, and lens care systems) and insulation materials. For many years, license fees from its float glass process had provided Pilkington with a substantial cash flow. However, the key patents expired in the mid 1980s, and Pilkington's license fees were correspondingly reduced. Saint-Gobain, a French conglomerate, started operations in the seventeenth century as the royal glassmaker to Louis XIV. About 20% of the company's sales were in flat glass and the rest were spread evenly among industrial ceramics, containers, insulation, paper-wood, pipe, and related materials. PPG Industries, established in 1883, was also a major paints and chemical producer. In 1992, its three major businesses—glass, paints and coatings, and industrial and specialty chemicals respectively generated 40%, 40%, and 20% of its total sales. Guardian Industries, the world fifth largest glass manufacturer, was a relatively small but fast-growing newcomer, known as a low-cost and aggressive competitor. It had lobbied to include the Japanese domestic sheet glass market in the structural impediments to trade debate between the U.S. and Japanese governments. While some foreign companies, such as PPG Industries, steadily penetrated the Japanese market with local marketing efforts, Guardian argued that the exclusive distribution networks functioned as an effective nontariff barrier.

With a few exceptions, competition in the glass business was seen as friendly but fair. The inherent limitations on transporting flat glass restricted import competition, and the large minimum efficient scale of a float glass plant and the need for distribution usually prevented competitors building plants in each other's major markets. The scale requirement also limited foreign direct investment to one plant per country in developing areas. As the economies of these developing countries expanded, however, it gradually became possible to justify a second plant. For example, Guardian entered into Thailand by building the country's second float glass plant in 1992. In India, Guardian also began to compete with Asahi Glass with its own float glass plant.

Asahi Glass's construction materials business produced wall, ceiling and floor materials made of glass, cement, ceramics and composites. In the early 1990s, the demand for its GRC (glass reinforced cement) fireproof siding boards surged despite the recession in Japan, and Asahi Glass was expanding the production of the material. In addition to selling construction materials, Asahi Glass was also developing systems technologies for construction.

Fabricated glass involved the additional processing and/or fabricating of flat glass in order to improve safety in products such as automobile windshields. The major flat glass manufacturers were also key players in this market, which had become increasingly global. In 1992, Asahi Glass had a 56% market share in the domestic market and a 20% world market share.

Glass bulbs for cathode-ray-tubes (CRTs) were manufactured in large-scale, specialized plants where molten glass was precision molded, polished and finished. As unique operational know-how and close coordination with TV set manufacturers was required, only a few major manufacturers of TV glass bulbs remained. Asahi Glass was the market leader with an exceptional quality control record and distinguished technology. It shared the domestic market equally with Nippon Electronic Glass, an affiliate of NEC (**Exhibit 8**). It held about a 30% global market share, leading competitors such as N. V. Philips in the Netherlands, Schott in Germany, and a joint venture between Samsung (in Korea) and Corning which covered Southeast Asia. Asahi Glass centrally coordinated the production and distribution of glass bulbs to Japanese and foreign TV set manufacturers from its two domestic and four overseas factories.

Chemicals

Asahi Glass's chemical businesses were handled by the five divisions of the Chemical General Division. The ratio of specialty and fine chemicals to the company's chemical business had steadily increased since the 1970s. The company also sold its chemical engineering expertise, providing, for example, membrane and electrolysis technology and technical assistance to other manufacturers. The bulk of its sales remained in the domestic market for its own use and to other Japanese chemical and manufacturing companies.

Alkali products still constituted the major portion of Asahi Glass's chemical business in 1992 although their relative importance had been gradually declining. As a major consumer itself, Asahi Glass produced 40% of the soda ash made in Japan, and was also engaged in the joint venture with Tenneco in the United States. It was also the largest domestic producer of caustic soda with a 46% market share using its efficient, environmentally-safe ion-exchange membrane process technology to supply pharmaceuticals, synthetic fiber, and paper and pulp manufacturers. In its commodity chlorine business, including inorganic and organic chlorine derivatives, the company had secured a stable position as the treatment of chlorine required specialized know-how and new entry was difficult. However, chlorinated solvents such as trichloroethylene were suspected of causing health problems, making the future potential of this line of business uncertain. Similarly, although the company was a top producer of fluorochemical products, its chlorofluoro carbons (CFCs), widely used as coolants for refrigerators and air-conditioners, were suspected of destroying the earth's ozone-layer. As a result, and in accordance with international regulations based on the Montreal Protocol, the company was reducing production of CFCs and investigating environmentally-safe

alternatives. At the same time, it was allocating resources to develop more value-added products such as fluorinated/fluoropolymer resins, rubbers and films, and pharmaceutical and agricultural intermediates.

Ceramics and Refractories

In 1992, Asahi Glass's Ceramics and Refractory Division offered the capability to provide turnkey high heat furnaces to industries such as steel, including the design of the furnaces, supply of refractory products themselves and the construction of the furnace. The Fine Ceramics Division, which was renamed from Engineering Ceramics in 1988, developed and marketed structural and functional ceramics but remained small relative to Kyocera.

Electronics and Other Businesses

The Electronics General Division supervised and coordinated the company's electronics business activities including those of the company's relevant subsidiaries and joint ventures such as Optrex, ELNA, Nippon Carbide, and Asahi-Komag. Its major products were IC-related components, glass delay lines, LCD panels and memory disks, and the majority of these products were sold domestically (Exhibit 10). Optrex, Asahi Glass's LCD joint venture, was increasing production rapidly and was strongly positioned in the market, particularly for automotive LCD panels, although major R&D capital expenditures were required. TFT active matrix LCD research, for example, had cost \$70 million per annum, and a new \$200 million facility would soon be built. Asahi-Komag's thin-film magnetic memory (hard) disks were also well accepted in the market because of their superior recording density.

Other divisions included Optical Products which produced and marketed glass lenses and plastic lenses with fluorine-based non-reflective coatings as well as frames under its own brand name. The Specialty Products Division also sold a number of unique home, health and medical products. To date the division had developed products such as a face washer based on the company's ultrasonic technology, and hot bath-water purifiers that used the ion exchange membrane technology. Other products included an egg timer, infrared sauna and a self-cleaning toilet. The division also produced fiber-reinforced plastic (FRP) for precision plastic parts, and marketed them to office automation equipment manufacturers.

Organization Structure and Systems

Organization Structure

Asahi Glass had adopted a matrix-like organization structure (Exhibit 7). While physical production and selling activities took place in the factories and sales offices, general management and profit responsibility lay in the divisions which were in effect given their own balance sheets. As the number of divisions had been growing over time in line with the company's diversification, the company had consolidated 30 divisions into 18 divisions in 1979, and introduced general divisions, one for each of the major product areas, in 1985 to act as sector level coordinators supervising several functional divisions. In 1993, the company had six General Divisions and five independent Divisions.

Asahi Glass's product divisions were closely interrelated; many divisions supplied raw materials or end products to other divisions. Transfer prices were not employed between production and sales divisions within the same product division, but were used if product flowed across product divisions such as soda ash supplied by the Chemical to the Flat Glass General Division.

New business activities that were not obvious fits with existing divisions were concentrated in the Specialty Products Division. This had its roots in a "Corning Center" established in 1960 with the purpose of leveraging the company's technology into consumer markets. Originally the company's IC and LCD developments had been concentrated in this division before being moved out to the joint venture companies or the electronics division.

International activities were coordinated by the International General Division. Since all of Asahi Glass' international subsidiaries were profit centers, and many of them were joint ventures in which Asahi owned only a minority share, the main role of the International Division was liaison between the overseas subsidiaries and the domestic product divisions. It monitored the performance of the overseas subsidiaries and affiliates; helped them in developing business strategies; provided analytic help for new plant decisions; and worked jointly with the divisions for new business development overseas. While Asahi Glass had about 200 Japanese employees overseas, nearly all were divisional personnel who remained assigned to their own division and not to the international division.

Since Asahi Glass was trying to localize its foreign activities, product divisions only exercised indirect influence on their overseas subsidiaries. While in many cases the company would have a minority Board membership and a few employees on assignment at the foreign subsidiaries, they would not dictate day-to-day activities, such as local pricing. Instead, subsidiaries sent monthly financial and operating reports for review, and needed approval only for major initiatives such as new plant investment or bond financing. For some of the major subsidiaries such as Glaverbel and AFG Industries, executive meetings were called once every three or four months for Asahi Glass's management to discuss the important managerial issues. Otherwise relationships were conducted more informally between relevant personnel on topics such as technology transfer and product development. The exception was the TV bulb glass business. Because Asahi Glass viewed this as a global business, all the foreign subsidiaries, except the Corning joint venture in the United States, were majority-owned and directly controlled by the Product Division. This enabled production, distribution and pricing decisions to be globally optimized and worldwide performance to be evaluated on an ongoing basis.

R&D and New Product Development

R&D activities were handled by the R&D General Division's research centers and by the Product Division's research laboratories. Of the company's 1,450 researchers, 700 were in the corporate research center, 200 in the separate Corporate Advanced Glass research center, and the remainder in product divisions. However, the Electronics Division laboratory was physically located at the corporate center. The Division intended to establish a laboratory on site with its other facilities "when it could afford it."

Corporate R&D was responsible for basic research, the product divisions for new applications. Formal meetings between the two groups took place monthly with the general manager of a product division meeting the heads of the laboratories at the corporate center which were most relevant to his interests. About 70% of the corporate R&D expense was borne by the divisions which paid for specific R&D programs, and the remainder was allocated to divisions as a percentage of their sales.

In an attempt to facilitate the product development process and make the company more entrepreneurial, the Star Business General Division hosted "star leader" products. The division had been introduced in 1985, to promote intrapreneurship. Twenty products then under development or investigation were selected and assigned to a leader, usually a champion of the product. The leader was given corporate funding and the authority of a division general manager to accelerate a product's commercialization by taking charge of the entire product development process from R&D through to manufacturing and sales. By 1993, two of those projects (i.e., weather-resistant fluoropolymer paints

and thin-film magnetic memory disks) had graduated back to the divisions when they reached ¥10 billion in sales, and six remained active. New projects were chosen from those proposed by the divisions according to their expected future potential size and profitability. Currently Asahi Glass was spending about ¥500 million every year on Star Leader projects, mostly on necessary capital investments.

Human Resource Management

Like other Japanese companies, Asahi Glass hired its future executives for life, and paid executives on a companywide scale that was independent of the business unit they worked for. The company ranked as one of the most desirable manufacturing companies to work for in Japan and recruited graduates from the country's most prestigious universities as well as some executives in their thirties via headhunters. After spending five years in one division, all nontechnical graduate hires would be transferred to a different division. After that, transfers between divisions were the exception rather than the rule, and each business developed its own culture. Senior management, however, tried to encourage cross-cultural transfers and promote a generalist perspective. Moves to subsidiary and joint venture companies also occurred. In 1992 Asahi Glass had 40 employees (mostly R&D personnel) at Asahi-Komag, 70 at Optrex and 10 at ELNA.

Planning and Resource Allocation

Since 1990 Asahi Glass had been operating under the "Vision 21" long term plan, whose theme was "Aiming to be a global corporation prospering in the twenty-first century." The vision saw the company "consolidating our business base further and maintaining expanded equilibrium of our business through harmony of expansion and stability." Objectives for the year 2000 were mainly financial, including targets for non-consolidated sales of two trillion yen (from one trillion in 1991), profits of 15% of sales (from 6%), R&D at 5.5% of sales (from 3%), and for 20% of sales to come from products introduced within the last five years. As a tool to measure the company's progress, Asahi Glass employed the concept of "weight value." The company believed it could achieve its objectives by moving into higher value-added businesses and raising the revenue per kilogram of output from ¥100 to ¥150 by the year 2002.

Below the long-term plan was a five year plan, revised every 2-3 years, that defined financial goals and resource allocation by division. The strategic planning group decided overall resource availability according to cash flow projections and acceptable debt levels. This was allocated among divisions according to how the company wanted the sales mix to evolve. The five year plan for 1987, for example, had anticipated electronics becoming 10% of corporate sales, and the division had accordingly been absorbing 15%-20% of the company's R&D in an attempt to reach that share of sales. The one year budget, revised every six months, was directly linked to these longer-term plans with divisional expenditures for capital and R&D in the budget expected to be set in line with the five-year plan.

Compared to other large Japanese companies, Asahi Glass was known for its top-down management style with a history of many important management decisions having been initiated by the top. The Senior Management Committee of the company (the top seven executives) met weekly to review important issues, monitor performance problems in the divisions as identified by the corporate strategic planning group, and approve capital requests over ¥1 billion.

Although top management and the corporate office provided general guidance, they typically did not dictate the strategy for each business. The rule was not to go too far from the core business, as corporate management did not want divisions to "parachute into new areas." President Seya—Asahi's first president to have come from neither a glass nor an engineering background—strongly believed that for each business unit to be viable it should be allowed to grow in its area of strength

and that middle management should take future oriented initiatives in order to encourage aggressiveness in the organization.

Issues Facing Asahi Glass in 1993

In the 1990s, Asahi Glass's performance was badly hurt by the sluggish Japanese economy. In particular, the domestic glass business expected sales and profits to decline for the third consecutive year in 1993.

Accelerated Globalization in Glass

The overseas expansion of the traditional flat glass business was an immediate growth solution for cash-rich Asahi Glass. As the "Iron Curtain" lifted and Eastern European governments started to privatize their glass operations, major global players rushed into this new market. Purchasing former government-owned glass plants and upgrading technologies, Saint-Gobain entered East Germany, Guardian Hungary, and Pilkington Poland. Asahi Glass's Glaverbel subsidiary moved into the former Czecho-Slovakia in 1991. The growth potential of Asian countries also attracted attention. Guardian built a float plant in Thailand, while Asahi Glass and PPG established a \$100 million joint venture in China in 1992.

In the meantime, Asahi Glass's presence in the North American market was enhanced in 1992 when Asahi Glass, jointly with Glaverbel, acquired AFG Industries. AFG was the second largest glass manufacturer in the United States with six float glass plants in United States and one in Canada. When AFG was bought out by its management in 1988, top management of Glaverbel, who had personally known AFG's management and been enthusiastic about the entry into the North American market, persuaded Asahi Glass to invest in the MBO. With PPG Industries and Pilkington's which already owned Libby-Owens-Ford, the second largest U.S. automotive glass manufacturer deterred by anti-trust regulation, Asahi Glass bid against Saint-Gobain to purchase a 20% share of AFG in 1988 with an option to buy the remaining 80% shares through 1993. After a heated internal discussion, Asahi Glass decided to exercise that option in June 1992, at a cost of about \$1.1 billion.

Such an accelerated globalization of the company, however, challenged Asahi Glass's traditional international practice. Notwithstanding its years of international experience, Asahi Glass was still developing its organizational capabilities outside of Asia. For several years, for example, it had experienced difficulties in coordinating with Glaverbel management before establishing mutual trust. More recently it was Glaverbel that was given responsibility for developing the African, Middle Eastern and Eastern European markets, rather than the domestic glass division. The larger-scale, worldwide operations would require a higher level of coordination and integration by the headquarters. The full ownership of AFG Industries, in particular, would position Asahi Glass in direct competition with the American glass manufacturers, some of which would in return demand the opening of what was claimed to be the "closed" Japanese glass market. Although overseas expansion in glass looked like an easy way to grow, President Seya was wondering if the company was truly committed to taking a global approach with more integration and coordination of operations.

Slow Growth of Electronics

In Japan, despite its decade-long efforts to develop the business, Asahi Glass was still struggling to establish a firm position in the fast-cycle electronics industry beyond its existing activities. In the LCD business, new thin-film-transistor (TFT) technology had been introduced, and major electronics firms such as Hitachi, Toshiba and NEC with strong skills in semiconductor

manufacturing had entered the now-large market. While Asahi Glass had established a second joint venture with Mitsubishi Electric, Advanced Display Inc., for the manufacture of TFT active-matrix LCDs, Mitsubishi Electric had taken a leading role in this venture with an 80% shareholding. Similarly, although Asahi Glass and Komag, Inc. agreed upon a second joint venture for developing thin-film heads for disk drives in 1991, top management realized that the disk head was an "assembly" business, distant from a "materials" business, and that they had stepped into a business in which the company lacked expertise.

Emerging New Glass Opportunities

The emerging opportunities in "new glass" did not come with any clear indication as to what direction the company should take. Although the definition of new glass was yet clear, it was understood to be glass with inherent functions such as selective light transparency, photoconductivity, and electrical insulation or with improved characteristics such as high surface flatness and machinability. Membership in the New Glass Forum, an association established on the initiative of MITI in 1985 to promote information exchanges, ranged from glass manufacturers to chemical, metal, electronics, cable and communications, machinery, and printing companies. The diversity of the membership illustrated the uncertain potential of this new technology. Electrically-insulated ultra-flat glass substrates for LCDs and memory disks, and architectural glass that excluded ultra-violet light were some examples of new glass already under development.

Chairman Furumoto frequently advocated the "restoration of glass." He said, "It was a mistake that the company had termed glass a 'mature' business in the middle 1970s." Under his leadership, Asahi Glass established a Fine Glass Division in 1985 and a New Glass Research Laboratory in 1988, while also taking leadership in the New Glass Forum. Some industry observers viewed the future of the new glass business as rosy, expecting it to reach \$20 billion by the turn of the century, and were optimistic about Asahi Glass's capacity to take advantage of it. Others pointed out that the most promising applications for "new glass" would be in the high technology fields whose competitive environments were far different from the traditional glass business.

Challenge of Combining Technological Expertises

Management believed that in the future it would be important to integrate its various technological expertises if it was to capitalize both on new glass technology and on other growth opportunities. President Seya emphasized that while Asahi Glass had traditionally focused on deepening technological expertise within each of its business areas, he believed that it could combine these expertises to develop unique products. One example was a bi-layer glass for automobiles which combined a layer of glass and that of urethane to improve safety. In 1990, the company agreed with Saint-Gobain to jointly develop it. Another example was a fluoropolymer-coated automotive window glass which repelled water more effectively. Integrating the company's various expertises would, however, not be an easy task, for the company was not used to such coordination, and the cultures of the various divisions often differed.

Revitalizing Corporate Culture

Management recognized that changing the climate of the organization was its biggest challenge. They felt that as the company grew older and larger, its founding "pioneer spirit" had faded away. The company historically had relied on developing new products from its technologies, and was not good at developing products that met customer needs. Chairman Furumoto, the first marketing executive to head the company, had been trying to create an entrepreneurial culture in the company where "wind can blow through" the organization—across divisions, and up and down hierarchies, as well as to promote "market in" customer-focused approaches. His belief was that top management's role was to create an environment that encouraged initiative and innovation.

Future Direction

One morning in the middle of September 1993, President Seya was reviewing the report on the electronics business prepared by the corporate planning staff. The report analyzed the strategic position of its major products, discussed the company's long-term strategy for this business, and proposed several strategic options. These options ranged from the extreme of divestment to another extreme of aggressive investment. While Asahi Glass would benefit if it could establish a strong foothold in this fast growing business, given the fierce competition, the establishment of such a position would be extremely costly, and its success was not guaranteed. President Seya felt that the discussion around the electronics business was illustrative of the company's dilemma in determining its strategic direction. Whatever action the company would take in this business, it should be aligned with those in other lines of business, and consistent with the company's overall direction for the coming decade.

Exhibit 1 Asahi Glass Company Financial Summary

	Millions of Yen										Millions ^b of Dollars	
	1992	1991	1990	1989	1988	1987	1986	1980	1975	1970 ^a	1972	1992
Consolidated												
Net sales	1,316,789	1,248,083	1,233,908	1,093,033	986,983	862,531	836,446	471,875	241,804	137,393	10,534	
- Glass and related	739,911	675,191	677,544	579,137	542,543	482,541	479,106	268,936	140,809	94,001	5,919	
- Chemical	390,139	382,143	371,483	357,149	313,608	270,272	266,768	177,37	89,559	35,948	3,121	
- Ceramics and refractories	31,044	32,309	32,199	26,892	22,205	23,585	23,978	17,981	11,433	7,445	248	
- Electronics	74,155	80,333	80,930	61,545	49,944	36,169	36,230	-	-	-	593	
- Others	81,540	78,107	71,752	68,310	58,683	49,964	30,364	7,619	-	-	652	
Gross profit	229,414	246,695	241,836	244,172	215,227	188,504	172,415	111,159	51,377	42,051	1,835	
Selling, general, administration	180,492	175,764	164,025	140,208	125,352	116,082	113,990	64,076	40,552	24,409	1,434	
Operating income	48,922	21,372	24,498	23,033	13,045	10,231	7,888	47,083	10,825	17,641	391	
Income before income tax	49,646	72,895	91,726	115,796	98,203	76,9698	60,954	43,354	1,198	15,228	397	
Net income	24,269	37,672	46,864	59,094	46,083	34,928	28,8322	23,254	5,778	10,028	194	
Cash	5,689	7,942	4,765	5,619	27,272	3,586	10,253	NA	NA	NA	130	
Total assets	1,515,626	1,447,824	1,216,142	1,226,638	1,020,377	932,308	822,961	456,520	366,197	183,751	12,125	
Long-term debt	244,488	295,730	193,420	202,361	155,732	142,462	108,296	31,333	112,404	32,029	1,956	
Shareholders' equity	596,709	584,930	557,645	515,307	450,692	393,475	328,393	183,878	101,317	67,806	4,774	
Return on sales (%)	1.8	3.0	3.8	5.4	4.7	4.0	3.4	4.9	2.4	7.3	1.8	
Return on assets (%)	1.6	2.6	3.6	4.8	4.5	3.7	3.5	5.1	1.6	5.5	1.6	
Return on equity (%)	4.1	6.4	8.4	11.5	10.2	8.9	8.8	12.6	5.7	14.8	4.1	
Nonconsolidated												
Sales	1,011,815	1,022,064	1,018,085	925,931	834,421	721,234	703,408	471,875	241,804	137,393	8,095	
Net income	20,484	37,004	40,536	45,076	42,055	32,518	26,389	23,254	5,778	10,028	164	
Research and development ^c	25,475	25,530	26,893	22,893	17,671	15,608	15,174	6,350	3,210	1,745	204	

Source: Asahi Glass Company

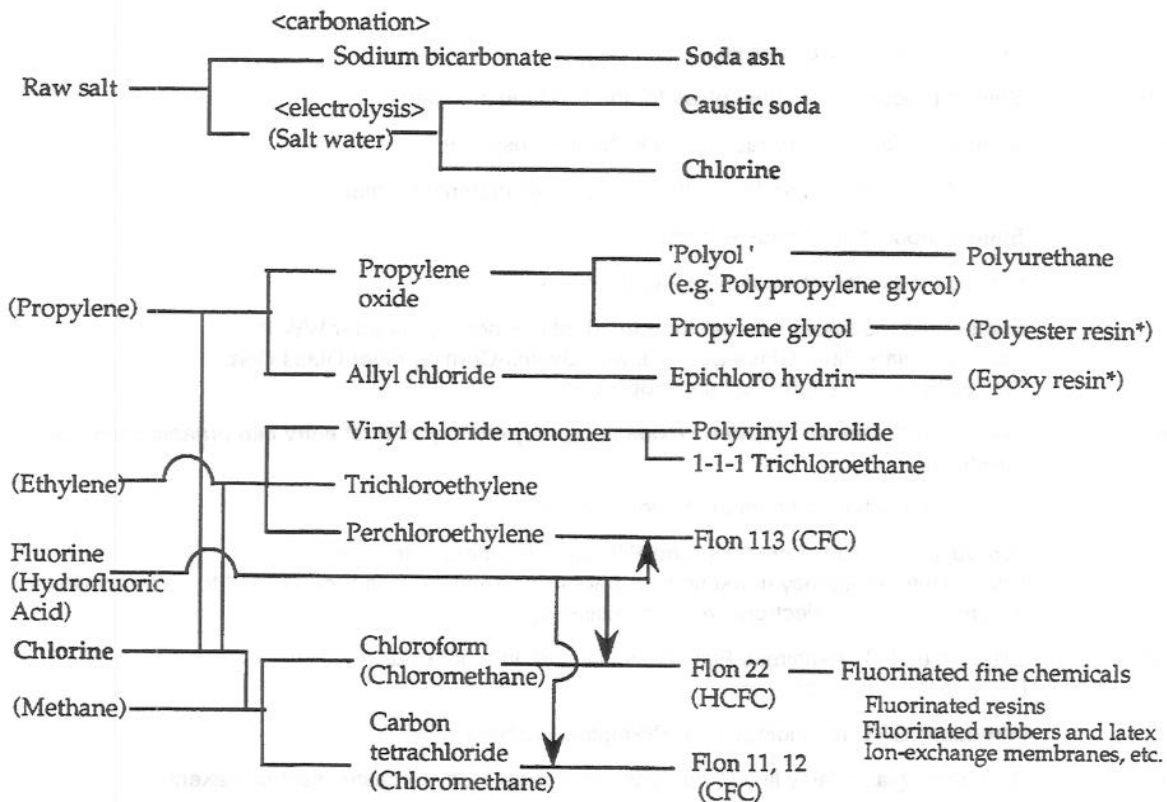
^aNumber of 1970 through 1980 were on a nonconsolidated basis.^bExchange rate: ¥125/\$.^cConsolidated R&D expenditure data was not available.

Exhibit 2 Chronological History of Asahi Glass Company

1907	Founded by Toshiya Iwasaki.
1909	Started production of sheet glass for the first time in Japan
1916	Started production of refractory bricks for in-house use.
1917	Started production of soda ash to provide a raw material for glass.
1932	Started production of caustic soda.
1954	Started production of glass bulbs for TV tubes.
1956	Established Indo-Asahi Glass Co., Ltd. (first overseas entry after WWII). Founded Asahi Fiber Glass Co., Ltd. with Owens-Corning Fiber Glass Corp. Started automotive fabricated glass operation.
1961	Started production of propylene oxide and propylene glycol (first entry into organic chemical business).
1964	Started production of fluorinated hydrocarbons.
1966	Introduced float glass process from Pilkington Brothers in the U.K. Entered into an agency marketing contract with Corning Glass Works Co., Ltd. to sell imported ICs (first entry into electronic related business).
1972	Established P.T. Asahimas Flat Glass Co., Ltd. in Indonesia. Developed fluorinated resin.
1973	Introduced GRC technology from Pilkington Brothers in U.K.
1974	Developed glass delay line in response to request from domestic electric makers.
1975	Developed ion-exchange membranes and chlor alkali process to produce caustic soda.
1976	Established OPTREX Corp. with Mitsubishi Electric Co. and started sales and production of liquid crystal displays.
1980	Developed structural ceramics.
1981	Made equity participation in Glaverbel in Belgium and MaasGlas in Holland.
1982	Started full-scale marketing of ophthalmic lenses, frames, and equipment.
1984	Made equity participation in Nippon Carbide Co., Ltd. and ELNA Co., Ltd.
1985	Founded Electronic Products Development Center.
1986	Established Asahi Glass Building Materials to expand building material business.
1987	Founded Asahi Komag Co., Ltd. (a joint venture with Komag of the United States) to manufacture thin-film magnetic disks in Japan.
1988	Established sales companies for sheet glass and building materials in Los Angeles (U.S.) and Hong Kong. Established Corning-Asahi Video Products, a joint venture that took over Corning's U.S. facilities for manufacturing TV glass bulbs.
1990	Established Tenneco Soda Ash Joint Venture with Tenneco Minerals to produce natural soda ash in the United States. Made equity participation in Splintex and established AS Technology S.A. in Belgium to set up automotive safety glass production capability in Europe.
1990-91	Made equity participation in Glaverbec Inc. in Canada, and Glav-Unionin Czechoslovakia through Glaverbel.
1992	Announced the acquisition of the remaining interests of AFG Industries.

Source: Asahi Glass Company

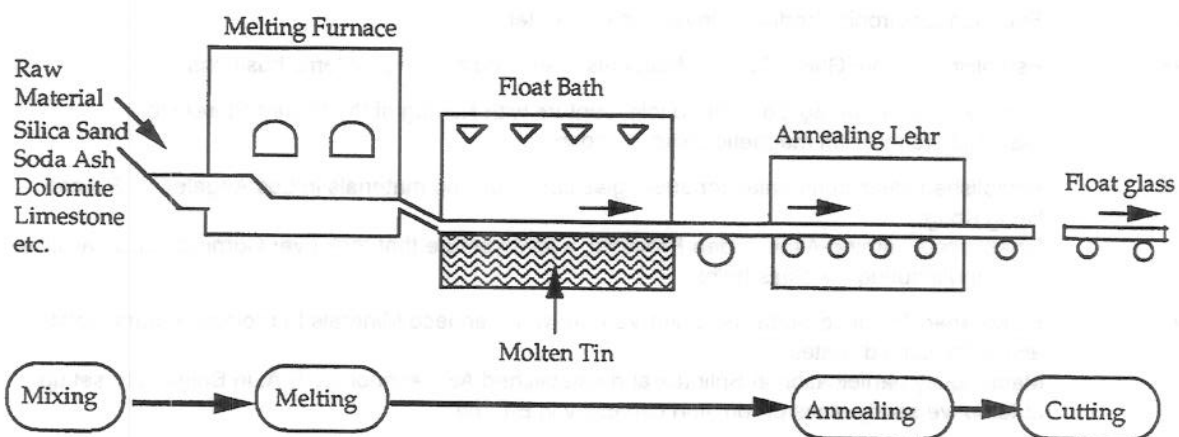
Exhibit 3 Derivation of Chemical Products



* Asahi Glass did not manufacture polyester resin and epoxy resin itself.

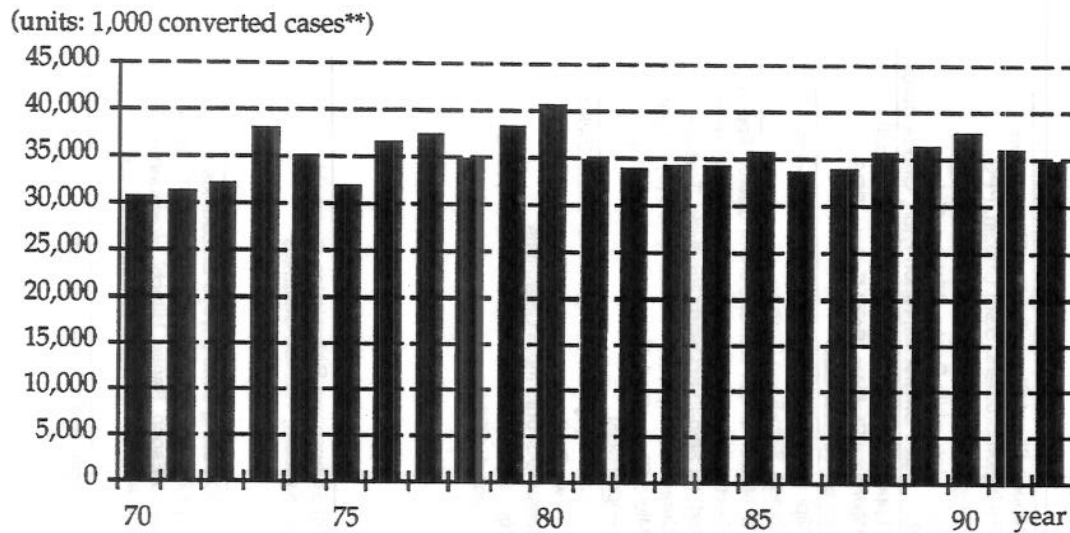
(Source: Asahi Glass Company with addition and modification by the author)

Exhibit 4 Float Glass Process



(Source: Asahi Glass Company)

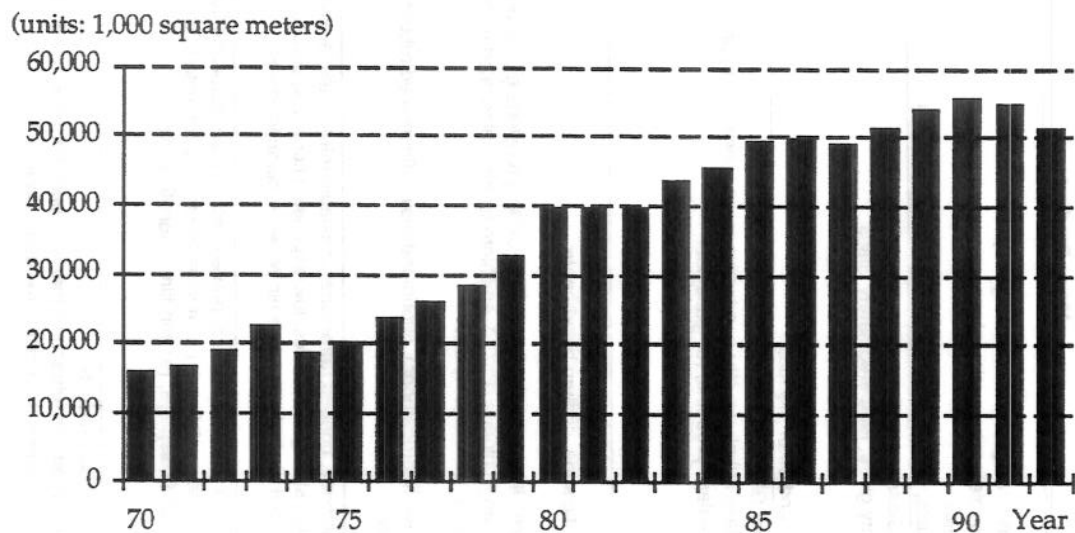
Exhibit 5 Development of the Japanese Glass Industry



* including float glass, polished plate glass, sheet glass and figured glass.

** One converted case equals 9.29m² with 2 mm thickness.

Production Trend of Safety Glass***



*** including tempered glass and laminated glass for both construction and industrial use

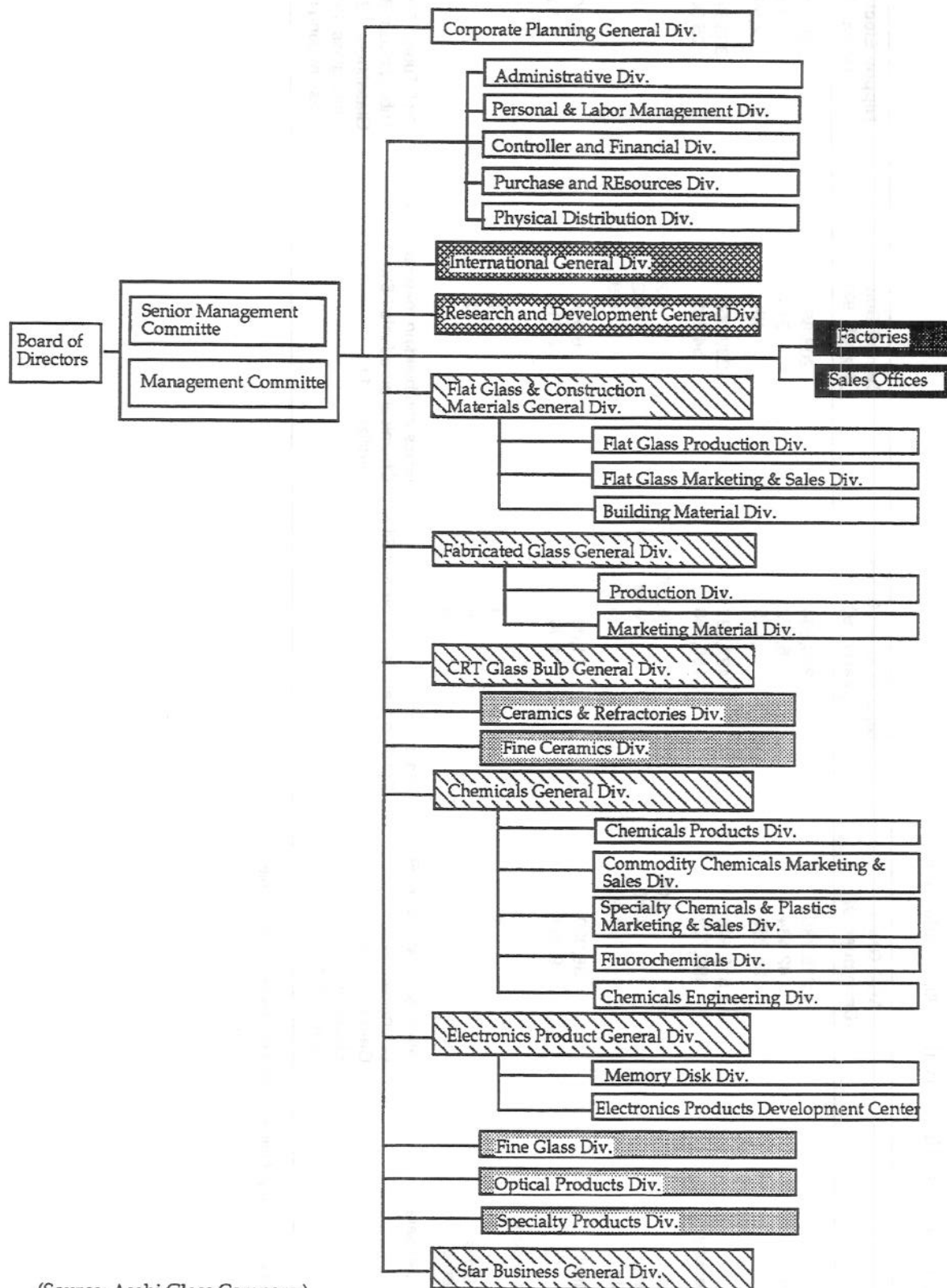
(Source: Flat Glass Association of Japan.)

Exhibit 6 Asahi Glass' Major Businesses and Products in 1992

Area/Sales	Major Products	Major Competition
Glass and Related ¥739,911 mil (56.2%)	Architectural Glass - float glass, tempered glass, laminated glass, - wired-glass, double-gazing units, mirror Construction materials - (a) GRC products, (b) ALC (autoclaved lightweight cement) Automotive Safety Glass - laminated safety glass, tempered safety glass CRT Glass Bulbs - TV glass bulbs and other products Fine Glass and Other Glass Products - (a) ultra-thin glass substrate, (*b) conductive glass substrate, (c) photomask glass substrate, (d) borosilicate-glass products, (e) glass fiber	Nippon Sheet Glass, Central Glass (global) Pilkington Brothers, Saint Gobain, PPG Industries, Gardian (a) Matsushita-Denko, Nichiba, Kubota (b) Asahi Chemicals, Nihon Iydon, Onoda Durox Nippon Sheet Glass, Central Glass (global) Pilkington Brothers, Saint Gobain, PPG Industries, Guardian Nippon Electric Glass (global) N.V. Phillips, Schott, Sam-Sung Corning (a) Nippon Sheet Glass, Central Glass, Nippon Electric Glass, (b) Geomatec, Sanyo Cacuam Ind. (c) Shin-Etsu Quartz Products, Toshiba Ceramics, Hoya, (d) Toshiba Glass (e) Nippon Micro Glass-Wool, Paramount Glass Mfg., Nippon Muki Tosoh, Tokuyama Soda, Central Glass Daikin, Showa Denko, Mitsui-DuPont Fluoro Chemicals (global) FMC, Dow, 3M, ICI, DuPont, ATO Hoechst, Allied
Chemicals ¥390,139 mil (29.6%)	Alkali Chemicals - soda ash, caustic soda, sodium bicarbonate Chloro-Chemicals - hydrochloric acid, liquid choline, propylene oxide, propylene glycol, polyol, vinyl chloride monomer, polyvinyl chloride (PVCs), epichloro hydrin, chlorinated methane, perchloroethylene, trichloroethylene Fluoro-Chemicals - CFCs (fluorinated hydrocarbons), fluorinated resins, fluorinated rubbers, specialty materials, coating materials	(a) Shingagawa Refractories, Kurosaki (b) Kyocera, Toshiba Ceramics
Ceramics and Refractories ¥31,044 mil (2.4%)	(a) fusion cast refractories, bonded refractories, castable refractories, aluminous cement (b) fine ceramics (high strength ceramics, low-expansion ceramics, ultrapure aluminum nitride ceramics), ceramic heat exchangers, ceramic blowers, ceramic valves	(a) IC trading firms (Ryoyo Electronics etc.) (b) KINSEKI (c) Nichicon (d) Sharp, Toshiba, Seiko-Espon, Sanyo, Hitachi, Hoshiden (e) Fuji Electric, Showa Denko, Mitsubishi Kasei
Electronics ¥74,155 mil. (5.6%)	(a) Semiconductors and semicustom ICS, printed thick-film products and hybrid ICS, (b) delay lines, delay line modules, (c) aluminum electrolytic capacitors, electropainted circuit and mounted boards, (d) LCD displays, (e) thin-film magnetic disks	(a) Hoya, Seiko, Toray Industries
Others ¥81,540 mil. (6.2%)	(a) ophthalmic and optical products (b) health and medical products (ultrasonic foamers, purifiers, far-infrared sauna etc.) (c) FRP (fiber reinforced plastics) precision-molded products	

Source: Asahi Glass Company

Exhibit 7 Asahi Glass Company Organization Chart



(Source: Asahi Glass Company)

Exhibit 8 Domestic Glass Industry (FY 1992) (millions of yen)

	AGC Group (December '92)	Nippon Sheet Glass (March '93)	Central Glass (March '93)	Nippon Electric Glass (March '93)
Net sales	1,316,789	286,564	203,881	205,170
Operating profit	42,434	6,672	6,310	9,128
Net income	24,269	1,115	495	2,593
Total assets	1,515,626	427,287	239,062	303,941
Shareholder's equity	596,709	150,588	54,232	105,305
Return on sales	1.84%	0.39%	0.24%	1.26%
Return on assets	1.60	0.26	0.21	0.85
Return on equity	4.07	0.74	0.91	2.46
R&D expenditure ^a	38,000	11,000	6,000	8,500
Employees ^a	9,924	4,001	2,612	4,518
Glass Plants in Japan:				
- Flat glass	4	3	2	0
- Fabricated glass	3	4	2	0
- CRT glass bulb	2	0	0	2
Composition of net sales:	Glass & construction: 56% Chemicals: 30% Ceramics: 2% Electronics: 6% Others: 6%	Glass: 66% Building materials & others: 34%	Glass and building materials: 64% Chemical products 25% Fertilizers: 11%	CRT Tubes: 59% Tubing glass: 8% Glassfibers: 12% Other glass: 20% Glass-making machines 2%

Source: Asahi Glass Company, Annual Reports of Respective Companies

^aNonconsolidated.

Exhibit 9 Worldwide Glass Industry (FY 1992) (million of U.S. dollars)

	AGC Group ^b (December '92)	Pilkington ^b (March '93)	PPG (December '92)	St. Gobain ^b (December '92)	Guardian ^c
Net sales	10,534	4,545	5,814	13,981	1,200
Operating profit	391	155	662	1,212	NA
Profit before tax	397	72	542	722	NA
Net income	192	(35)	319	449	NA
Total assets	12,125	4,368	5,662	17,918	NA
Shareholders' equity	4,774	1,604	2,699	7,357	NA
Return on sales	1.84%	(0.78%)	5.49%	3.21%	NA
Return on assets	1.60	(1.41)	5.63	2.51	NA
Return on equity	4.07	(2.22)	11.82	6.10	NA
R&D expenditure	304	88	221	NA	NA
Employees	9,826	41,600	32,300	104,002	8,000
Float Glass Production					
Float plants ^a (total):	29.0	26.5	18.0	17.0	13.0
- Asia & Oceania	14.0	4.0	1.0	0.0	2.0
- North America	8.0	6.0	13.0	0.0	6.0
- Central & South America	0.0	4.5	0.0	1.5	1.0
- Europe	7.0	11.0	4.0	15.5	4.0
- Others	0.0	1.0	0.0	0.0	0.0
Composition of net sales:	Glass & construction: 56%	Glass: 80%	Glass: 37%	Glass: 18%	Glass: 80%
	Chemicals: 30%	Insulation: 3%	Coating & resin: 40%	Ceramics: 14%	Photofinishing laboratories: 15%
	Ceramics: 2%	Visioncare: 12%	Chemicals 19%	Containers: 17%	Others: 5%
	Electronics 6%	Optronics: 2%	Others: 4%	Insulation: 13%	
	Others: 6%	Others: 3%		Paper-wood: 12%	
				Pipe: 11%	
				Building materials: 9%	
				Fiber reinforcements: 4%	
				Others: 2%	

Source: Asahi Glass Company; Annual Reports of Respective Companies; *Forbes* "The 400 Largest Private Companies in the U.S.", December 6, 1993^aAs of February 1992 (including float tanks in cold repair and under construction). A joint venture plant operated by two companies was counted as 0.5 plant for each company.^bExchange rates: ¥125/\$, \$1.7663/£, FF5.2935/\$.^cprivately-held company

Exhibit 10 Asahi Glass' Position in Electronic Businesses

	Asahi Glass's Involvement (Asahi's Share)	Major Electronic Products	Sales in 1992	Market Size in 1992 (Worldwide)	Relative Position/Market Share	Major Competitors	Market Growth	Relevance for Asahi Glass's Other Businesses
Electronic Product & Specialty Product General Divisions	Internal divisions	- glass delay lines - sales of ICs & semicustom ICs	¥3 billion NA	¥12 billion NA	Among top three low share	KINSEKI, Matsushita Electronic Component Ryoyo Electronics, Tokyo Electron, Nissei Sangyo, Ryosan	Flat Very high	supplier to TV sets manufacturers
OPTREX	joint venture with Mitsubishi Electric (60%)	passive-matrix LCDs	¥36.0 billion	¥325.5 billion (including passive- & active-matrix LCDs)	Among top five	Sharp, Seiko Epson, Sanyo, Citizen Watch, Casio Computer	About 10% p.a.	- Glass substrate - Expertise in chemical compounds
Advanced Display Inc.	Joint venture with Mitsubishi Electric (20%)	TFT active-matrix LCDs	Joint development will be completed by September 1994		(No production yet)	Sharp, Toshiba, NEC Hitachi, Hoshiden	30%-40% p.a.	Use of automotive panels
Asahi-Komag	Joint venture with Komag Inc. (40%)	Thin-film magnetic disks	¥10-15 billion	¥60 billion	Among top four	Fuji Electric, Showa Denko, Mitsubishi Kasei	Medium-high	- surface treatment skills (e.g., sputtering) - application of glass to disk substrates
ELNA	Largest shareholder (25%)	- aluminum electrolytic capacitors - printed circuits	¥16.6 billion ¥8.4 billion	¥498 billion (all capacitors) ¥885 billion	Among top six in aluminum electrolytic capacitors NA	Nichicon, Nippon Chemi-con, Murata Manufacturing, Nippon CMK, Hitachi Chemicals, Ibiden	Almost flat Flat or slight increase	Discrete electronics business
Nippon Carbide	Largest shareholder (18%)	Electronic materials	¥5 billion (10% of total sales of the company)	NA	NA	Kyocera, Noritake Co., Ltd.	NA	Ceramic processing technology

Source: 1992 Annual Reports of Asahi Glass, ELNA, and Nippon Carbide: Relative position/market share, market growth, and the numbers for Optrex are estimated by the author

17 Acquisition Integration: Creating the Atmosphere for Value Creation*

Philippe C. Haspeslagh and
David B. Jemison

The integration process is the key to making acquisitions work. Value creation can occur only after the two firms come together and begin to work toward the acquisition's purpose. Moreover, the post-acquisition management task is extremely complex for several reasons. First, integration must be both detail-oriented and subtle. Integration involves interactions between the firms that directly affect capability transfer, and also, interactions which have an indirect impact and are directed at the general integration atmosphere and context.

Secondly, the managers' integration task is complicated by the underlying tension between forces that require the dissolution, or at least the permeability, of the organisation's boundaries and those that require the protection of the separate identities of those same organisations. An imbalance in either direction may completely impede value creation, either because capabilities are destroyed or because integration does not take place. This complexity is enhanced because the balance between these forces has to vary selectively, not only among sub-units but also over time.

Acquisition integration is pregnant not only with complexity, but also with incomplete information and unexpected problems and opportunities. It must, therefore, be viewed as a highly dynamic process of adjustment. While some firm decisions have to be made, flexibility will always be required. Integration requires decision-making by skilled executives in the midst of a changing situation

* The concepts and ideas of this chapter were based on the book by Philippe C. Haspeslagh and David B. Jemison (1991), *Managing Acquisition: Creating Value Through Corporate Renewal* (New York: Free Press).

where new information is becoming available. Consequently it requires that top management empower these executives with the necessary authority to manage those interactions.

We will argue in this chapter that, no matter what type of acquisition one is dealing with, acquisition integration should be seen as a two-phase process. The first phase sets the stage for the actual integration, largely by addressing the interaction issues that determine the atmosphere and shape the context in the period immediately following an acquisition. Only in the second phase should managers go after the actual substantive interactions across both organisations. In practice, the distinction between the two phases is not precise and the duration of the first phase may vary greatly. But it is, in all situations, a critical ingredient for the value creation to occur.

In some situations we studied, the integration effort was guided by a clear logic. In others the operating managers were left to feel their way, as the acquisition justification had left them with little guidance about what to do or had proved to be completely unrealistic. Some managers had a starkly simple view of integration. For some, integration meant 'making them like us', yet others managed as if 'nothing should change' in either firm. While some managers saw integration as a 'black box' where things just seem to happen after the acquisition, most managers we studied realised they were immersed in a complex process, full of subtleties and pitfalls. They simultaneously were trying to move two organisations forward towards a common purpose and trying to adapt that purpose to the changing reality of the situation.

Our purpose in this chapter is to offer insights into how integration contributes to value creation, and how the stage for integration can be set. We want to take the lid off the 'black box' of integration and peer inside.

THE INTEGRATION PROCESS

Although managers acknowledge its importance, the details of integration are often postponed by negotiators because of their uncertainty, their complexity, and other pressures during the acquisition decision process. Moreover, integration has different meanings that depend on the type of acquisition, who gets involved in the process, and the types of capabilities to be transferred.

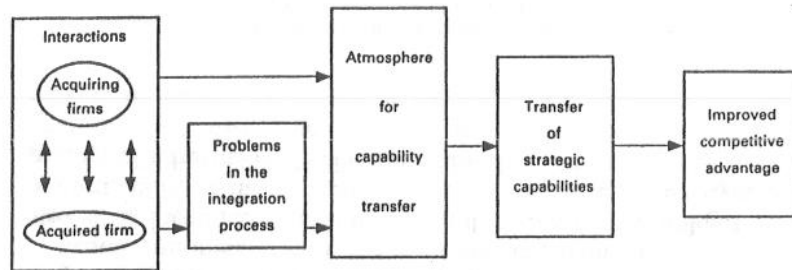


FIGURE 17.1 *The Acquisition Integration Process: How Strategic Capability Transfer Leads to Improved Competitive Advantage*

Notwithstanding differences in integration needs, understanding the complexity and subtlety of integration can benefit from the same sort of systematic thinking and analysis that offered insights into the pre-acquisition decision-making process. Our research found a common set of elements in the integration process that remained the same regardless of acquisition type or differences in integration needs. Figure 17.1 points out the dynamics involved in the acquisition integration process.

Integration is an interactive and gradual process in which individuals from two organisations learn to work together and cooperate in the *transfer of strategic capabilities*. The difficulty in managing the integration process, however, is not just the result of difficulties in bringing about the capability transfer itself.¹ The real challenge comes from the fact that such capability transfer depends on the creation of an appropriate *atmosphere* that can support it. Shaping such an atmosphere is especially difficult, as *problems in the integration process* itself naturally tend to subvert its creation. To minimise those problems and to successfully integrate two organisations requires a systematic attention to the variety of *interactions* between the firms that create the atmosphere needed for capability transfer and successful integration.

Transfer of Strategic Capabilities

The heart of integration is the transfer and application of strategic capabilities. Capability transfer takes place in several ways: they may be *given* to the new sister firm, they may be *shared* for common use, or they may be *taught* to people in the other firm. Three types of capability transfer were studied – operational resource sharing, func-

tional skill transfer, and general-management skill transfer, each of which involves very different organisational challenges. In addition, a number of other potential combination benefits, such as size benefits and financial-resource sharing, were seen to come with the acquisition.

In *operational resource sharing*, value is created through economies of scope or scale. This is the most straightforward type of capability transfer, and can take place through either giving or sharing. Examples include combining sales forces, sharing manufacturing facilities, trademarks, brand names, office space, or distribution channels. The integration challenges encountered in sharing resources typically involve either combining assets or coordinating their joint use.

The rationalisation often associated with resource sharing often involves major organisational trauma. But, even if both original resources are fully kept, their combination can be disruptive. Some of that disruption arises from the organisational consequences of merging two heretofore separate units. Other disruptions result from the fact that joint use of assets is not costless. Even if two operations may be able to use the same assets, their use of these assets might ideally be different. When combined, these assets will now be configured and used in a way which may represent a compromise for *both* organisations.

For resource sharing to create value, the benefits of sharing must outweigh the more hidden costs of compromise. The importance of those costs of compromise will depend not only on how different the needs of both organisations are in terms of how to use the resources in question, but also on the organisations' ability to manage those differences, again by a mutual teaching and learning process.

Transfer of Functional Skills

Even when the more short-term benefits may be sought in resource sharing, the primary challenge, and long-term source of value creation, in acquisitions is often the effective transfer of functional skills between the firms.

Ironically, the more skill transfer is strategic, the more difficult it will be to achieve the required understanding and cooperation in this teaching and learning process. What makes a capability strategic is that it is not easily imitated. The difficulty in imitation comes from the fact that strategic capabilities, especially skill-based ones, are embedded in the skills of a group of individuals and in the procedures and cultures of firms.²

This embeddedness means that transfer of functional skills is neither immediate nor easy, and will involve a process of teaching and learning before they can be used. For example, an acquisition intending to improve a firm's product-development capabilities will often require an extended period of learning on the part of the firm receiving the capability. Typically, the more difficult a capability is to imitate, the longer it will take to learn and apply.

Transfer of General-Management Skills

While it is also difficult to transfer general-management skills, such transfer has important differences from functional skill transfer. In general-management skill transfer, the managers of one firm (typically the acquired firm) are influenced on general-management issues of strategic direction, resource allocation, financial planning, and control, or human-resource management. This influence can occur through subtle coaching, direct involvement or imposition of systems. In the case of general-management skill transfer this implies many vertical interactions at the general-management levels between the acquired unit and the acquired organisation that reports to it. In functional skill transfer by contrast, the interactions are horizontal and involve managers at operating levels in both organisations. These managers do not have a direct hierarchical relationship, like the managers that pursue general-management skill transfer, which often limits their willingness to participate in such learning.

Combination Benefits

By contrast, size-related benefits such as market power and purchasing power require little coordination to be put into practice, as does the transfer of financial resources. Financial resources can be given by one organisation to the other, without disrupting the latter in major ways.

In summary, each type of capability transfer involves different challenges. The process is complex because what is required often goes beyond simply giving or sharing resources or assets, but, rather, necessitates complex learning by both firms. It is because of the complexity of such learning that the content and atmosphere in which this strategic capability transfer is to take place becomes so important.

Atmosphere

Before any capabilities can be transferred between firms, regardless of the method of capability transfer, the right atmosphere must be created. Our research suggests that this atmosphere has five key ingredients:

1. A *reciprocal understanding* in both firms, of the other firm, as an organisation and as a culture.
2. The *willingness* of people in each firm both to transfer and to receive the strategic capability necessary for value creation.
3. The *capacity* to transfer and receive the capability.
4. *Discretionary resources* to help foster this atmosphere.
4. A *cause-effect understanding of the benefits expected* from the acquisition.

Reciprocal Organisational Understanding

If a firm's strategic capabilities are embedded in the wider context of its organisation and culture, then transferring and applying them successfully requires, first, an appreciation of the contexts from which they come and to which they will be transferred. It also requires an appreciation of any adjustments necessary to use them appropriately in this new context. This includes a knowledge of, and appreciation for, the other firm's values, history, organisational approach, demographics and culture. The need for reciprocal understanding depends, of course, on the type of capability to be transferred and on the acquisition's relation to the company's business domain.

Developing such reciprocal understanding involves a two-phased learning process. First, each party learns about the other, and then each learns about the capability to be transferred. The experiences of a marketing manager in a finance company acquired by a bank reflect this progression of learning:

Immediately after the acquisition we didn't know what to think, they were bigger and had more procedures than we did. So we resisted any offers to help. After a while we learned that their procedures actually improved efficiency and we listened more. We were then able to see how we could apply their very systematic approach to product development in our situation.

The need for reciprocal understanding is, of course, dependent on the type of capability transfer being pursued. The demands are highest when the latter is based on the teaching of tacit skills, which involves learning to understand the context into which these skills are embedded, and learning to replicate that context or to adjust for differences.³ For example, the ability to sell an acquired company's products through the parents' distribution system requires a great deal of detailed, channel-specific knowledge about particular customers' needs, transportation costs, prevailing norms in pricing and delivery, etc. Much of this knowledge is embedded in the acquired firm's salesforce. Within the framework of capability transfer, managers in the two firms must first develop an understanding of the other's operations, and put the capability they expect to transfer into context, before they can add new products to the distribution system.

In the acquisitions we studied, managers typically encountered more differences between the combined firms than they expected. Even being in the same business did not necessarily guarantee either a common language or an understanding of the other organisation. For example, after the merger that created the Dai-Ichi Kangyo Bank, the managers had to publish a dictionary of more than 200 words to ensure the correct interpretation of key terms. Before the merger, the word for loan in one bank was a verb meaning 'to loan money'. In the other bank it was a noun meaning 'money to be lent'. These differences in the meaning of such a central concept for the business highlighted the relative market orientation and aggressiveness of the two firms, factors that greatly influenced their ability to understand and learn from each other.

Willingness to Participate

Many firms face serious difficulties in developing the *willingness* of people in both organisations to work together after the acquisition. In the firms we studied, managers and employees often regarded working with people in the other organisation as a zero sum game (where one group 'won' at the other's expense) rather than as a chance to capitalise on a strategic opportunity. We observed a variety of motives for not working together, including fears for job security, the loss of power or control over resources.

Other factors that affected willingness to participate included differences in firm size, a desire to hold on to old ways of doing things, reward systems, and prior experience with acquisitions. Differences

in firm size often made people in the larger firm less willing to help those in the smaller one. As a manager in a smaller, acquired firm told us:

... we could have made close to \$750,000 operating profit on a project like that, but nobody at the parent would help us because those numbers were just noise level to them. To us, they were really record setting.

Some employees wanted to protect their old ways of doing things because of their uncertainty about changing or their inability to understand what the future would be. For example, a middle manager in one acquired firm said:

We quickly backed away from synergy discussions and fought attempts to work together because we didn't want to be smothered by their bureaucracy.

Reward systems played an important role in developing a willingness to participate, by the ways in which they encouraged cooperation between the firms. One manager we spoke to said:

I wouldn't work with most of the people from the parent that called me. They got merit points on their year-end evaluation [for bonuses] just for suggesting something with us. At the end of the year I was judged on my bottom line results, not on how many meetings I attended.

Prior experience with acquisitions, or with other firms of a similar type, seemed to increase the willingness to participate. The CFO of one acquired firm said:

I may have had an advantage around here after the merger. I had been through a couple of others when I worked for a bigger firm and understood why they [managers from the parent] were acting that way.

Capacity to Participate

For capability transfer to occur, the parties must have the capacity to participate in the transfer. That is, the capability must exist and the

appropriate people in both firms must be able either to transfer or to receive it. While it may go without saying that a capability must actually exist before it can be transferred, this suggests that the managers in the acquiring firm must understand beforehand whether it exists or not. The presence of a capability cannot always be taken for granted. It must be more than a presumed technical miracle or managerial wishful thinking. If an acquisition justification is hurriedly developed, with an assumption that a capability exists, it may result in severe problems.

For example, Exxon Corporation bought Reliance Electric for \$1.2 billion, in 1979, with the understanding that Reliance could inexpensively commercialise an innovation from Exxon's research laboratories, a device to change alternating current to direct current and thus save abundant amounts of electricity. After the acquisition, Exxon discovered that Reliance was not able to manufacture at any cost advantage. Exxon paid a \$500 million premium on its purchase of Reliance for a capability that did not exist.⁴

Beyond the capability's existence, the firm to which it is being transferred needs to have the critical mass of intellectual and organisational abilities to use and apply that which it has acquired. For example, a bank manager who tried to apply a new marketing approach from an acquired subsidiary said:

We tried for several years to learn how to use their direct mail, response based advertising and failed each time. We eventually understood that the reason they could do it and we couldn't was because they had a low-cost, measurement oriented philosophy that depended on continually bringing in new customers. We were used to waiting for the customers to come to us and none of our people were used to thinking that way.

An often overlooked aspect of the capacity to participate is the time overload facing managers in smaller acquired firms. Because they have fewer staff and less management depth, these managers run the danger of being smothered by staff and functional managers from the parent, who arrive to help implement the acquisition.

Discretionary Resources

Once an acquisition was made, the ability to commit additional resources after the acquisition, at both the parent and subsidiary levels,

played an important role in creating the atmosphere for capability transfer. In the firms we studied, allowing some slack in the post-acquisition situation did not imply sloppy management practices.⁵ Instead, it represented the basis for dealing with operating and strategic contingencies at the corporate and business-unit levels. In the parent corporation, slack provided both protection and manoeuvring room for the subsidiary, preventing a premature fixation on short-term results when the new subsidiary did not immediately meet performance expectations.⁶ As the product-development manager in a food-services firm said:

We got lucky because the parent firm had a great year and it gave us time to put some of our new product ideas in place. Two years later their profits fell off and we got a lot of pressure. Had we gotten that pressure earlier, we'd never have the product line we have today.

A less fortunate example was Pillsbury's acquisition of Green Giant, a prestigious brand name in canned and frozen vegetables. Their strategy was to develop, under the Green Giant label, a line of high-quality, frozen foods that could be quickly prepared in a microwave oven by busy career people. But another Pillsbury subsidiary, Burger King, suddenly needed a big cash infusion to stay alive after Wendy's began the 'hamburger wars'. Thus, Pillsbury's strategy for Green Giant could not bear fruit because there was no slack at the overall firm level; the corporate resources they had expected to receive had been needed elsewhere.⁷

In the acquired firm, slack also provided manoeuvring room for the middle managers responsible for integration and capability transfer. Slack gave them the opportunity to deal with unanticipated events, smooth out political problems and make some concessions to disaffected employees. The CFO of an insurance firm told us:

I was pretty conservative when we did our first budget and fortunately the parent didn't know enough about our business to detect the padding. It turns out that we needed it all. We spent a lot more money than we'd ever expected to keep key people happy (beyond their salaries) and to pay for everything from extra travel to temporary staff.

Cause-Effect Knowledge of Benefits

Before capability transfer can take place, the acquisition's broad initial purpose must be clarified in operational terms for the middle and operating-level managers who must work out the details of bringing the two firms together. Our research suggests that managers need to develop and understand the *nature*, the *source*, the *timing*, and the *predictability* of the benefits they expect from an acquisition. These issues are best clarified as part of the acquisition justification. Failure to be specific, and to draw up a precise timetable of when outcomes can be predicted, may create just as many problems as an overly rigid and simplistically detailed plan, when the sources of the benefits are really evolutionary and difficult to specify with precision before the fact. The experiences of one manager at a food-service company we studied reflect the often difficult, iterative process involved in understanding the sources of acquisition benefits:

Sure, the top people had some good ideas about what we could do together. When we got down to the specifics, there were just too many problems. But, the exercise of trying to figure out how to make their [top management's] ideas work, gave us lots of ideas where we were ultimately able to work together and help each other.

Acquisition decisions are usually made with particular types of capability transfer in mind (e.g., resource sharing, functional skill transfer, general-management skill transfer). But benefits from capability transfer do not occur without effort. To apply the capabilities, the people involved must understand how they can lead to improved competitive advantage. Strategic capabilities represent *potential*; once transferred, they must still be *applied* before they can lead to a competitive advantage.

The need to understand the sources of benefits is important because different types of capability transfer will require different characteristics in the atmosphere. For example, in resource sharing, management groups may be pressured to show how and when facilities will be consolidated to gain the expected benefits. In contrast, the transfer of embedded functional or general management skills will require more time and patience for the required learning to take place.

In some cases the benefits are evolutionary, as the process of

working together leads managers to discover benefits that were not anticipated when the acquisition was conceived. These discoveries usually occur at the middle-management and operating levels, where the work actually gets done after the two groups have come together. These opportunities are often difficult to predict beforehand, especially if the acquisition analysis and decision processes were centralised among the senior management and staff, with little involvement by operating-level personnel. The comments of a bank's senior planning officer point to this problem:

As soon as it [the acquisition] looked like a 'go', we quickly prepared a set of synergy arguments for the board that made sense *prima facie*. It turned out that none of these ever amounted to anything. The only ones that seemed to work were those that came from the operating guys.

In summary, the atmosphere for capability transfer is important because of its influence on the exchanges and learning that take place after an acquisition. This atmosphere is created through the interaction of the people in both firms. These interactions, which are under the direct control of the managers in both firms, are the subject to which we now turn.

Interactions at the Heart of Integration

Ultimately, the atmosphere necessary for capability transfer results from the stream of interactions between members of the two firms. Our research points to three types of interactions – substantive, administrative, and symbolic.⁸ Substantive interactions involve the efforts to transfer capabilities. Administrative interactions focus on developing information and control systems to bring the acquired firm into the overall corporate fold. Symbolic interactions are attempts to promote or influence certain beliefs. Although attention from senior managers and outsiders is usually focused on the substantive aspects of the merger (how value will be created), the impact of the administrative and symbolic interactions on acquisition success was equally important in the firms we studied, especially in the early period after the acquisition. While administrative and symbolic interactions can have substantive outcomes (that is, affect the value-creating aspects of the acquisition), it is important to acknowledge their different roles.

The initial contacts between representatives of the two organisations are typically formal, scheduled meetings among senior executives with staff members and some operating executives, who form sub-groups and task teams to tackle different aspects of bringing the firms together. As time passes, the number of informal, random and unsolicited interactions typically increases, for a variety of reasons. These subsequent interactions involve managers from multiple levels in both firms, who differ in status, outlook, perspective, experience and motivation.

Substantive interactions are directed toward accomplishing the acquisition's original or emerging purpose, and involve actions deemed necessary for value creation. They typically begin with senior managers from both firms developing a common agreement about areas in which the two firms should work together (e.g., technology transfer, market development, product rationalisation, facility consolidation). The result is a set of plans that reflect the management groups' assumptions about the synergies that are possible and what has to happen to bring them about. In some situations these plans have already been developed during the analysis and negotiation, and are modified as more is learned about the situation.

Administrative Interactions. The desire to 'get our arms around' the acquired firm is very strong among managers in most acquiring companies. Thus, activities that establish reporting relationships, information flows and operating procedures that are necessary to monitor and control the new subsidiary are among the first to take place. These exchanges typically involve staff people from the parent company meeting with the line managers at the new subsidiary, followed by meetings among staff groups from both firms. The imposition of parent-company controls and management systems typically begins here. However, some firms have an automatic reflex that forces their administrative systems and practices onto the acquired firm without considering whether these systems are right in the new setting. This misapplication of management systems can severely limit the ability to create the atmosphere necessary for capability transfer.⁹

Symbolic Interactions. Nothing is ever the same after an acquisition; typically, the rules of the game change for everyone. People in both firms respond to these breaks with the past by engaging in a variety of activities that have a high symbolic content. These actions

have a dual purpose – (1) to set a general direction for the new organisation, and (2) to stake out 'sacred' ground that should not be violated.

As signals from top management, symbolic interactions can demonstrate and explain to both organisations the new organisational purpose and philosophy. For example, when Fuji and Yawata Steel, in Japan, were merged to form Nippon Steel, senior executives' quarterly meetings were rotated among the different plants for the first few years after the merger. This policy gave senior executives a chance to demonstrate the unity of the two firms, and to have extensive discussions with employees at each location about the firm's future direction.

Lower-level managers and employees in both firms use symbolic interactions to signal their basic beliefs, skills, capabilities, or positions on key issues, to people in the other firm. These are intended either to gain an advantage in forthcoming negotiations between the two firms or to ward off particular types of encroachments by the other firm before they have a chance to surface. In a sense, it is less what you do than how you do it that matters. Symbolic interactions begin before the agreement is signed and continue in one form or another throughout the life of the acquisition.

THE NEED FOR A STAGE-SETTING PHASE

Every acquisition, after closing, involves a transition period before actual integration between the two companies begins. We will call this period, which may vary from a few days to many months, the stage-setting period. Although it may involve briefly postponing the pursuit of actual integration synergies, it is not a phase of procrastination or loss of momentum. On the contrary, it is a time filled with many simultaneous activities, all intended to underpin the momentum and facilitate later capability transfer. It is also a period where many actions are taken within the acquired firm (and, hopefully, a few also by the acquirer). Figure 17.2 shows where the stage-setting phase fits into the overall acquisition integration process, as discussed earlier.

It is easy to take a detached view and agree intellectually that a transitional, stage-setting period is needed, but in practice it may be hard to stick to this principle. The need for a period of reflection, or a

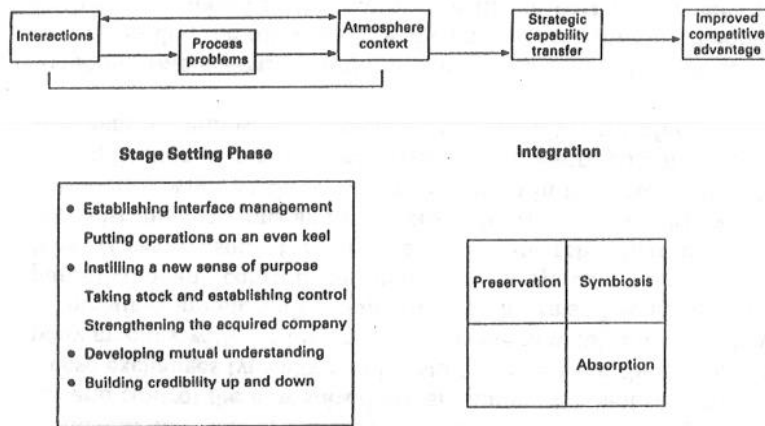


FIGURE 17.2 The Stage Setting Phase in the Overall Acquisition Integration Process

SOURCE: Philippe C. Haspeslagh and David B. Jemison, *Managing Acquisitions: Creating Value through Corporate Renewal* (New York: Free Press, 1991).

detour, may seem superfluous to managers who, after making an acquisition, feel under pressure to deliver the quantifiable benefits expected from the acquisition.

Challenges in the Stage-Setting Phase

In general, our research suggests that in this stage-setting phase pursuing seven tasks is key:

- Establishing interface management
- Putting operations on an even keel
- Instilling a new sense of purpose
- Taking stock and establishing control
- Strengthening the acquired company
- Developing mutual understanding
- Building credibility up and down.

Though conceptually different, these tasks are by no means sequential. If anything, as we shall discuss, they represent simultaneous activities on many fronts. One theme runs through all of them: communicate and communicate again.

In this section we will first distinguish the nature of interface management by type of integration. Next, we will examine the gatekeeping roles in more detail, and finally we will describe how they are established in the group of managers that form the gatekeeping structure.

Establishing Interface Management

The very first step in any acquisition integration is to ensure the ability to direct and control the interactions between both organisations; in other words, to establish interface management. To do so, top management of the acquirer must decide how to manage the boundary between both firms, and select the individuals for these boundary management roles. Once appointed, this executive or this team that will manage the interface must then determine the extent to which filters need to be put in place to shield the acquired firm, and how to make them evolve.

The requirements and nature of interface management depend entirely on the integration approach that is required. In *absorption* acquisitions the transition toward a single organisation needs to be managed in such a way that the pace, nature and timing of the interactions can be controlled. Transition management involves members of both organisations from the beginning, and immediately addresses issues involving the combination of both firms. Thus, it can be seen as part of the integration process proper, as much as of the stage-setting phase. This requires a *temporary structure* that will elaborate and implement the absorption process up to a point where ongoing operating management can take over and the two organisations operate as one. Coordinated by a single executive who is responsible for working out the integration plan, such a temporary structure may vary in both size and composition, depending on the complexity of the integration and the resources available in both sides. The transition manager may set up a small team, a task force, or a series of task forces, with representation from both organisations, which are in turn coordinated by a central steering committee. Key decisions include how to structure the task-force organisation, how to staff it and how to support the process.

Preservation acquisitions are driven by the need to continue to protect the distinct identity and character of the acquired firm; the acquired capabilities are typically central to success. This will require a *durable gatekeeping structure* to ensure that the acquired firm is managed according to its own needs rather than on the basis of routines of the acquiring organisation, not just in the early stages, but indefinitely.

Interface management in *symbiotic* acquisitions aims to achieve semipermeable membrane-like properties between both organisations to allow for capability preservation while at the same time enabling extensive capability transfer. This requires an *evolving gatekeeping structure*, that can slowly transform itself from one akin to the gatekeeping structure of preservation acquisitions, in the stage-setting phase, to the ongoing management of the joint organisations, as the two units in question amalgamate with time.

What then are, in the stage-setting phase, the typical roles and composition of such a gatekeeping structure?

Gatekeeping Roles

Gatekeeping involves three interrelated roles: *filtering* unwanted interactions, *channelling* acceptable ones and *fostering* desirable ones.

If the separate identity and culture of the acquired organisation is to be preserved, then one role of gatekeeping is clearly to filter and restrict the type and number of contacts or compliance demands that are imposed on the acquired company to those that do not unintentionally threaten its identity. The legitimate excuses for managers from all areas in the acquiring company and its functions, territories, or businesses to become involved in an acquisition know no bounds. What seems to the parent-company managers as prudent, minimal involvement, often appears as a blizzard of costly, unrealistic demands on the smaller, acquired company. As one acquired general manager commented:

There are really only five of us in our management team. If we were to attend all the meetings where we are requested or invited to attend, there would be no time left for running the business.

While the extent and quality of filtering is important, restricting the channels through which acceptable demands are formulated is even more essential. The impact of any imposition or request by the

acquirer derives as much from the process by which the demand reaches the acquired organisation as from the actual impact of that demand. That is why it is so essential to channel all demands through a gatekeeping structure, and why, as we shall discuss, it is important that there be a clear host structure to which the acquisition reports. In addition to a clear gatekeeping structure, further distinctness from the mother company may be assured through separate location and management practices.

The need to respect agreed-upon channels, to filter out any interactions that run counter to what is required for the strategic purpose, is only part of the programme of gatekeeping. Gatekeeping has another side as well – to foster the interactions, and acceptance of demands, that will contribute both to the proper atmosphere and to the capability transfer required. What those actions and interactions in the stage-setting phase are will be discussed at length in the next sections.

At this stage we will restrict ourselves to emphasising how, no matter how disciplined the management of the early interface, allergic reactions will always occur, as any new demand may reawaken the fears of individuals and the perceived threat to the organisation with which they identify. In the ICI acquisition of Beatrice Chemicals, because each of the Beatrice companies was rather small, they felt burdened by even the filtered claims on their time. Bob Schultz, general manager of LNP, commented on this:

There is an expectation that we can work miracles, but we have very limited people resources. There are more claims on our time that were just not there before, (including interviews with professors). We have to put our foot down as I see it. I cannot tell my people to keep ICI out, but I can tell them that at the end of the day they have a plan to meet and it is up to them to say no.

Beyond pointing out to acquired managers that ultimately it is their responsibility to stand up and resist excessive demands, succeeding in this delicate period will require an inordinate amount of communication, in all directions, from all people involved in the gatekeeping effort. This must begin with clear backing from the top.

Gatekeeping Structure

How are these challenging roles best fulfilled? A typical gatekeeping structure consists of three sets of individuals, working as a team that

divides these roles yet cooperates closely: the head of the host structure, the head of the acquired unit, and a small number of support/resource people.

The *head of the host structure* is the executive to whom the acquired unit reports. The primary function here is to keep the corporation at bay, focus the acquired unit on a renewed purpose, build credibility in both directions and orchestrate the efforts of the other members of the gatekeeping team to create the right atmosphere. As discussed earlier, the parent firm typically has a host of people who appear from all corners of the firm in an ostensible, usually genuine, effort to 'help' the acquired firm. The head of the host structure must stem this flow and inspire the actual interface group to accomplish the purpose of the acquisition.

The second part of the gatekeeping role structure is the *head of the acquired unit*. Besides this person's regular role in running the business, the acquisition demands that they spend a very active effort in shielding the people in the acquired firm so that they can remain focused on the operating task. Perhaps no factor is as important, after the acquisition, as the character and calibre of the person running the acquired firm, and that person's ability to relate both to the demands and expectations of the acquirer and to the needs of the acquired organisation. This is truly the manager squeezed in the middle, who needs all the support, and sometimes comfort, he can get.

Choosing the manager for the acquired unit is both crucial and difficult. Having a situation where top management can stay is of course always preferable. Yet always to keep the manager, as some companies are doing, all too often invites problems. Whether previous owner/managers can remain motivated and adapt to working within a corporate framework is just one of the difficult questions. An equally serious question is whether the existing top manager can bridge both perspectives, particularly when the acquirer has a more complex organisational and strategic context than the manager was familiar with. In the Beatrice acquisition, all general managers were confirmed in their jobs, with no successions planned from inside ICI. Although each worked out, some did better than others, and that factor alone explained much of the difference in how well integration was progressing. In all cases, general managers of acquired companies will need help and guidance to understand how the parent's system operates, as we will discuss later.

The common solution, when a new general manager is required, is to bring in an executive from the parent to the general-manager

position. Yet two caveats are necessary. First, this person must bring general management expertise to the job. Acquisitions are no place for functional managers to learn how to be a general manager. How transferred managers will be able to create acceptance will not only depend on their personal skills, but also on the role they may, or may not, have played in the pre-acquisition period. Secondly, even if experienced general managers are selected, they can fail if asked to solve a problem in a business which has a patently different strategic logic from those with which they are familiar. Our research, having witnessed a lot of problems with putting internal people in charge of domain-extension and prospection efforts, adds to the view that general management skills are not as general as many firms would hope.¹⁰

Especially in domain-extension acquisitions, our research suggests that it may often be preferable to do something companies do not easily consider – bringing in an experienced manager from another firm in the industry. In the short run this person's industry expertise and credibility may make for a more effective contribution than management from either the parent or the subsidiary can accomplish. This must be traded off against the long-run Achilles' heel of such external managers – their lack of an effective network in either the parent or the subsidiary companies.

Independent of where the new head of the acquired unit comes from, he or she will need to be assisted by a few *resource people*, which the acquiring firm brings into the acquired company or into the host structure. These people may have a formal job or responsibility in the acquired firm, such as controller, or planning manager; or they may just be broadly put at the disposal of the new subsidiary, in a less hierarchically responsible position. In all cases, however, their primary role is to help solve the acquired company's perceived problems, to make themselves useful in fostering reciprocal understanding and to be a focal point for questions and communication.

An example of an effective resource person comes from the Beatrice acquisition. Rex Palmer, a member of the original pre-acquisition team, became the gatekeeper in an operational sense, and used his considerable knowledge of ICI to try to encourage Beatrice managers to see how they could use ICI's worldwide resources. An experienced manager, who had been the controller for many companies within Beatrice, stayed on. In addition, two other managers were brought into the host structure later. One had an excellent overview of ICI R&D and another was very familiar with ICI's

international network. The group was completed with an experienced human-resource consultant. Nobody was assigned to any company in particular, although each started working closely with a few, depending on the issues.

These gatekeepers have complementary roles and must operate as a team. As we shall discuss later, the selection and empowerment of this *team* is crucial. Our research suggests that the style, insight and actions of these few individuals will largely determine the atmosphere of the acquisition, and ultimately its outcome.

Operating on an Even Keel

The immediate post-acquisition period is fraught with vulnerability stemming from both inside and outside. Managers and employees, for whom uncertainty has been created, mentally disengage and must be reenlisted. Equally important, competitors that sense a moment of potential weakness will redouble their efforts and focus on the market franchise of the acquired organisation. Suppliers begin to question the firm. Customers wonder if their levels of service will be the same. A new sense of purpose (to which we turn in a moment) contributes to addressing these questions. But, beyond these more lofty aims, it is essential to pay immediate, explicit attention to getting the company operating on an even keel as soon as possible, by concentrating managers' and employees' attention on the nuts and bolts of the daily business, and fighting the devils 'outside' instead of each other.

The first thing required is to focus attention on outside competition by providing immediate performance targets. These need not be based on extensive analysis, but should be simple and, depending on the managers' sense of the situation, challenging or in line with prior results. In one of the situations we studied, where the acquired company had 'lost its way' in slowly deteriorating performance, the acquirer walked in with fairly arbitrary expectations for improvement across the board. Not only were the cost improvements and sales targets met, the rapid-action orientation succeeded in pulling the organisation out of its languor.

In ICI, performance was dealt with by focusing the Beatrice companies on reaching their own original budget objectives, an item which would also maintain their credibility *vis-à-vis* ICI. Yet, while Lochtenburg clearly announced his expectation that budgets should be met as originally planned, it was also agreed that, after that date, the acquisition premises would be reassessed. This allowed him to

steer a middle course between achieving credibility and avoiding the trap of falling into a deterministic pattern, as we discussed earlier.

Quick attention to getting the boat sailing again also has to extend to the firm's business partners. When Electrolux took over cash-strapped Zanussi, it used its financial resources to extend credit to the trade and to create the feeling that 'Zanussi was back'. Similarly, in the Unisys merger, a critical role for Michael Blumenthal was to personally reassure key Sperry and Burroughs accounts.

The second, yet concurrent, action is to alleviate concerns by carefully communicating and confirming what will *not* change, especially wherever it touches the managers and employees of the acquired firm. Especially in areas such as executive compensation, bonuses, pension schemes and employment decisions, it is important to differentiate the areas in which there will be 'no change' from those where adjustments will be made. The cost of making changes despite earlier assurances to the contrary increases over time.

Instilling a New Sense of Purpose

Institutional leadership capable of instilling a new sense of purpose is needed to activate managers and employees in both firms after the merger.¹¹ Indeed, while quickly providing clear, short-term objectives is a critical ingredient in putting the acquisition on an even keel, this does not suffice if one cannot create a much deeper driving force: a new vision for both companies in the light of the acquisition, which translates into a clear mission to be achieved.

Mission statements must be credible if they are to motivate the organisation and to reenlist the participation of managers and employees. This means they must make sense to the managers of the acquired company, who understand the strengths and weaknesses of their own organisation and are beginning to understand the acquirer.

Sometimes acquiring executives face a very real problem in that they may not have many of the answers about precisely where the organisation will have to go and what changes this will imply. It is our observation that most problems arise when managers either provide no guidance at all, or, to the contrary, make unfounded statements intended to reassure the acquired. In such cases it is better to acknowledge the beginning of a process to develop a new mission, to which both organisations' members will be able to contribute. It is important, however, to combine this, in the meantime, with a clear effort at understanding and listening and a willingness to make

general-purpose resource commitments that are logical irrespective of the future path. Both these efforts then serve as substitutes for the temporary lack of a clearly defined new mission.

Taking Stock and Establishing Control

We have discussed how one of the big dangers in acquisition integration is determinism: holding on to a fiction, rather than working with and acknowledging reality. One of the first areas of attention for the interface management team is to establish the information basis to verify, complement, amend, and detail the pre-acquisition view. This effort has to be a conscious checking of both the internal and the external premises upon which the acquisition was based. We are not suggesting the imposition of control systems; rather, this involves a systematic attitude of listening and drawing out the facts and opinions not only of a broad spectrum of employees, but also of distributors, customers, and other stakeholders. Managers need to seek out potential problems rather than repress them. Clearly this is not always easy, especially when the managers themselves, and their bosses, were recently involved in selling the acquisition idea.

As one manager we studied took up his job he travelled extensively, getting to know the people and the businesses. He had two main messages: 'We want to learn about the business and have you learn about us so that we can start to build bridges towards synergy.' and 'Keep doing what you are doing, meet objectives and make the budget.'

Introducing the parent's basic systems for corporate control is also a must, and actually a prerequisite, for establishing *de facto* control, and is often necessary for legal reporting requirements. Much depends, however, upon how selectively those systems are introduced and used.¹² Decisions about which management systems to introduce, and when to do so, require great care as systems are very task-specific. This is especially so if those management systems are for corporate-information purposes and not for operational use by the unit in question. In situations we studied, successful host structures often went out of their way to buffer the subsidiaries and to absorb corporate demands for information at their own level.

Strengthening the Acquired Organisation

After the interface management team has developed a detailed sense of the weaknesses and shortcomings of the acquired company, the

next priority is to remedy them as quickly as possible. Most acquisitions present several intrinsic weaknesses, some of which were known, with others uncovered as time passes. Our research found that such weaknesses need to be remedied in the stage-setting phase, before starting to integrate the two organisations operationally. In the case of real turnaround situations, this may take an extended period of time. In such situations the stage-setting phase may become as important an ingredient of value creation as the subsequent integration effort. Before dealing with operational problems, the right people need to be in place. The place to start is in remedying any weaknesses in staffing or staffing depth as soon as possible.

In the Beatrice acquisition the companies did not need much operational improvement, as they were, typically, well run by their general managers. The main strengthening came from a willingness to commit resources, in sharp contrast to the cash cow role executives felt their businesses had been playing under Beatrice. This, again, helped them overcome their apprehensions, or they now felt that 'there is much more interest in the company, and a lot more opportunities'.

Another ICI acquisition, that of the French paint manufacturer, Valentine, illustrates well not only the need for strengthening up before integrating, but also how the acquirer's expertise and legitimacy for change can combine to provide the momentum for an accelerated restructuring and strengthening of the acquired company.

In 1984 the ICI Paints Division had acquired Vernis Valentine S.A., a leading French decorative paint manufacturer, with a small presence in the automotive refinish business. In contrast to its strong brand image and market presence, the company's manufacturing capacity was in need of drastic restructuring. The company had begun to build a new plant, but it had not faced the tough decision of whether to rationalise its old existing site in Paris, which suffered from excess manpower and underinvestment. The previous owner, a French financial holding company, was reluctant not only to make the investments but, even more so, to risk the social conflicts thought to be inevitable when a company is to be restructured, in France. Although a fairly detailed restructuring plan had been drawn up before the acquisition, it stayed on the shelf.

After the acquisition, ICI quickly decided to press on with the rationalisation of the company, largely using the existing plan. ICI proceeded to close most of the production operation in Paris, reduced manpower levels and divested the automotive segment. The rationalisation plan, contrary to initial expectations, did not lead to

labour strife, largely because of a continuing process of information, dialogue and efforts to tackle any problems that emerged over the next few months. The plan was presented through a massive effort of communication, both outside and within the established French process of communication to employees, works councils and labour unions, in a way which (1) covered a detailed strategic, organisational and economic analysis diagnosing the problem and its causes; (2) outlined a plan for recovery including investment commitments and employment consequences; and (3) offered a social plan to deal with the latter. The social plan was presented as an effort which was intended to reflect a desire to do the utmost to help staff weather what was described as a 'difficult and damaging, but inevitable period'.

More than the sheer number of job losses involved, it is how a firm goes about communicating and handling the repercussions of any restructuring that determines the extent of resistance. The combined efforts of a line management that communicated clearly; a truly professional personnel and labour-relations staff; support from outplacement firms; and a willingness to be humane and generous, succeeded over and over again in the firms we studied. This occurred despite environments where unions had not yet lost their power.

Developing Mutual Understanding

As we discussed earlier, the development of a reciprocal understanding is a key element in creating the atmosphere in which capability transfer can take place. Yet the natural tendency of executives in an acquiring firm is to focus the early acquisition process on tackling and deciding substantive issues. After all, they have typically paid substantial premiums for this new firm and need to provide results to justify their decision.

Acquiring managers often underestimate how differences in perceptions on substantive issues are rooted in poorly understood differences in the wider context of both organisations. They also tend to underestimate, independently of the agreements reached, how implementation may be confounded by those differences.

An important element of setting the stage for acquisition integration is to spend time educating managers about each other's organisational and cultural contexts. There are often pressures to limit the effort spent building this understanding. Many managers will see the time and slack resources required for these activities as superfluous in

the light of all that is on their agendas after an acquisition takes place. But our research suggests that it is the subtle but important actions taken to improve this reciprocal understanding that tend to influence both the comfort level and the effectiveness of managers with the other organisation.

The classic efforts of most companies to bring the managers of both organisations together, 'so that they get to know each other', fall far short of what is required. Two other efforts need to take place, and fall under the broad umbrella of communicating a new purpose. The first is a programme to raise consciousness about the importance of these differences in a broader context, and to build an awareness of what the main differences are. The main purpose of this is not just a reduction in ill-timed interactions. It is also to reduce the negative impact of how these events are experienced. The side that feels 'wronged' may no longer interpret what happened as an intentional act, and will be better able to raise the issue dispassionately. A second effort is to take a very broad and open-ended perspective of where future capability transfer may come from, by multiplying the opportunities for people to interact by providing them with challenges and problems.

In Beatrice, with the situation under control and with an atmosphere in which people had reenlisted, Lochtenberg tried to interest Beatrice managers in discovering what ICI could do for them. The members of the gatekeeping team had been carefully selected and introduced as resource people in those areas where it was felt that ICI would be of assistance to the companies: through its R&D, its geographic network and its general resources. Lochtenberg used the 1986 budget process as a transition towards increased contact with the future host units.

The support received from ICI in different areas, and the respect and competence they had sensed in the budget and plan discussions with their ICI counterpart, were slowly nudging the Beatrice managers along a new path. At the same time they were reluctant to be pushed faster or further, clinging proudly to their past identity, for which the corporate name and logo was a clear symbol.

Their feeling was strong:

'We are a company, not a business.'

At the end of the year Polyvinyl was formally made to report to Mond's Resins and Intermediates Group; LNP and Fiberite became

part of the Advanced Composites business. Lichtenberg, as new Principal Executive Officer of the Specialties Businesses, retained the other companies. As we shall discuss later, each new host structure brought its subsidiaries along a different path in the integration phase.

Building Credibility Up and Down

Another key challenge in the early integration phase is the need for the gatekeeping team to build credibility with both the acquired organisation and their own superiors. Establishing credibility is a major challenge in acquisitions. Indeed, within the ongoing context of existing parts of the company a division's or a manager's credibility is typically well-established and changes slowly. In contrast, acquisitions and their managers typically begin with a credibility slate on each side that shows no credit. In fact, from the perspective of the managers of the acquired company, the acquirer's emissaries may start with a serious debit position.

Our research identified a number of common factors associated with successfully building credibility. *Vis-à-vis* corporate managers, gatekeepers build credibility with perceived truthfulness of communication, demonstration of personal competence and fairness, and the ability to deliver resource commitments. In contrast, gatekeepers build credibility in the acquired firm from early results and the perception of a healthy post-acquisition atmosphere.

To gain the cooperation of acquired managers it is very important, as we stated before, that early pronouncements about the acquisition's purpose and activities have credibility. They must not only ring true but must also be borne out by actions. Interface managers must generate a level of respect for their personal expertise and perceived fairness. Managers in the acquired organisation must also begin to see the acquiring organisation as one that they can depend on. Thus, it is very important to provide what acquired managers perceive as real help, and to deliver on early commitments.

The gatekeeping team needs to preserve its credibility with corporate management as well. The acid tests tended to be actual results and a sense that the integration atmosphere is healthy, with turnover of key people serving as the thermometer. We shall later return to how the pressure for rapid performance may subvert the quality of post-acquisition development. But, to counter a regression to such simple parameters as operating results and turnover, the gatekeeping

team will have to use constant efforts to demonstrate a sense of control, a sense of direction and a sense of progress.

All Things First

Although one can conceptually distinguish these seven tasks, in practice the job of setting the stage derives a great deal from its complexity because, from the beginning, each dimension is important. Clearly the first task is to set up the interface-management structure. But after that all the other tasks, however, befall the team at once. It is very difficult for an acquisition team to recover from an initial lack of filtering out unnecessary interactions. Any later efforts at strengthening the gatekeeping will be swimming against the tide of already-established norms of involvement and 'help'. Although beefing up the quality of the acquired company may take time, it benefits greatly from a quick start. Early moves to build and strengthen become crucial in getting people to reenlist. Moving quickly to cut, or weed out, what is in essential minimises uncertainty and resistance. From day one, people are looking for clues as to what the new game will be. Unless efforts to develop reciprocal understanding are made early and often, mutual suspicion will fill the void.

The importance of hitting the ground running, after an acquisition, puts a substantial premium on thorough and detailed preparation during the period between the signing of the deal and the closing date, when the attention finally shifts to how to integrate.

SETTING THE STAGE IN DIFFERENT ACQUISITIONS

So far we have stressed the commonality in the stage-setting phase, independent of the integration approach. The Beatrice example was used because, in one acquisition, companies were involved that would ultimately need three very different integration approaches to realise the expected strategic capability transfer. At the same time, however, it is clear that both the exact nature of each stage-setting task, and its relative importance, is quite different depending on whether the stage is being set for an absorption, a preservation, or a symbiotic acquisition, and depending on whether the acquired firm is in good shape or not.

All other things being equal, symbiotic acquisitions present a much

greater challenge in this phase than preservation acquisitions, which are in turn more challenging to begin than absorption. The role of the early phase in an absorption acquisition is clearly important, but is less a determinant of the success of the fairly massive integration task which follows. In contrast, for preservation acquisitions the essence of the preservation task needs to be established in this early stage.

The difficulties of stage-setting in symbiotic acquisitions stem from the fact that, while early preservation is crucial, that preservation has to take on another quality to prevent the capability protection from being achieved at the expense of a hardening of the companies' respective boundaries. This requires even more subtlety and sophistication in the methods and the means for doing so than in the case of preservation acquisitions, as isolating mechanisms cannot be applied so simply. At the same time, the gatekeepers in symbiotic acquisitions face pressures for interference which are legitimate, and which they have to resist while acknowledging them.

The duration and importance of this stage-setting phase also varies with the shape the acquired company is in. In turnaround situations, the need to strengthen the acquired firm before undertaking any integration with operating units of the acquiring firm is critical.

CONCLUSION

The immediate post-acquisition period is pregnant with expectations, questions, and reservations, among both personnel and managers of the acquired and acquiring organisations. Yet the first interactions, communications and decisions made by the acquirer also bring with them a certain legitimacy of the 'new owners'. They occur at a time when personnel and managers in the acquired firm may often be unsettled, but have not yet firmed up their mind on how they will react.

We described seven challenges which acquiring company managers must pursue quickly and simultaneously if they are to benefit from the early period, which will come closer to being a grace period than any subsequent effort at redressing the situation ever will. If successful, the stage-setting period results in a realistic and sensible integration roadmap or plan, and in an atmosphere where individuals have begun to reenlist with a new sense of purpose.

NOTES

1. See Jemison (1988) for a detailed discussion of the forces involved in the strategic capability transfer process.
2. See Teece (1980) and Nelson and Winter (1982), especially Chapter 4, 'Skills', which provide an excellent discussion of embedded skills and routines.
3. The difficulties of transferring context-based knowledge or skills (also known as 'tacit knowledge' have been explored by a variety of scholars. Polyani (1962, p. 49) pointed out that 'the aim of a skillful performance is achieved by the observance of a set of rules which are not known as such to the person following them'. Arrow (1974) suggested that organisations use codes to convey information efficiently and that there are costs to changing the codes. Nelson and Winter (1982, pp. 81-2) observed that 'much operational knowledge remains tacit because it cannot be articulated fast enough, because it is impossible to articulate all that is necessary to a successful performance, and because language cannot simultaneously serve to describe relationships and characterize the things related'. From another perspective, Coase (1937) pointed out that information is not costless, and Williamson (1975) argued that the use of information is difficult because of its impactedness. Teece (1980) suggests that internal organisation may be preferred over markets in generating scope economies from embedded know-how. Itami (1987) refers to such skills as invisible assets. Lippman and Rumelt (1982) discuss how the difficulty in imitating an asset can enable a firm to earn abnormal returns in a competitive marketplace. Barney (1986) discusses how certain inimitable assets, like a firm's culture or history, are sources of strategic advantage.
4. See Beman (1981).
5. Financial economists, on the other hand, argue strenuously that firms should not accumulate organisational slack. Jensen's (1987) arguments about free cash flow reflect this perspective directly.
6. Organisational slack is an important concept in strategic management and organisation theory. First referred to by Cyert and March (1963, p. 36) it refers to '[the disparity] between the resources available to the organization and the payments required to maintaining the coalition'. Pfeffer (1981) discusses the importance of slack resources and incremental slack resources as a source of power in organisations. See Bourgeois (1981) for an excellent review of the concept. Other scholars who have explored conceptions of slack include Child (1972), Cohen, March and Olsen (1972).
7. See several articles in the popular press about this acquisition. For example, 'Green Giant: The new course that makes it attractive to Pillsbury', *Business Week*, 2 October 1978, pp. 66-7; 'It's Good Logic, But is it Good Business?' *Forbes*, 13 November 1978, pp. 138-40; 'Pillsbury's ambitious plans to use Green Giant', *Business Week*, 5 February 1979, pp. 87-8; 'Pillsbury: Growth could suffer as Burger King profits shrink', *Business Week*, 7 June 1982, pp. 118-20.
8. See Haspeslagh and Been Farquhar (Chapter 16 of this volume) for the initial development of this framework. See Haspeslagh and Jemison

- (1991) for its elaboration in detail and managerial implications.
9. See Jemison and Sitkin (1986) for a discussion of the forces that are associated with the ways in which acquiring companies misapply their own management systems in acquired firms.
 10. Kotter's (1982) research suggests that general managers accomplish their responsibilities through agendas and networks. A new general manager coming in from outside the firm or, more seriously, the industry would not have the internal or external networks established to operate effectively. Chandler (1990, p. 138), in describing the problems with extensive diversification, said that 'Too many managers made the mistake of listening to academics who told them management was a general skill.'
 11. See Haspeslagh and Jemison (1991), where they discuss the need for institutional leadership in the context of creating the atmosphere for capability transfer.
 12. The impact of the misapplication of management systems in acquisitions is discussed in Jemison and Sitkin (1986).

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MERGING THE INVESTMENT BANKING DIVISIONS OF SHEARSON /AMERICAN EXPRESS AND LEHMAN BROTHERS KUHN LOEB (B)

New Business Focus

After pondering the many pros and cons of where to focus their business, Sherman Lewis and Peter Solomon decided to direct their investment banking division to Fortune 500 companies. "We had to go where there was expected to be a relatively high frequency of large corporate finance transactions," asserted Solomon, "and this characterized the large companies."

The Calling Program

In order to generate this new business from larger accounts, Lewis and Solomon instituted the calling program with precise responsibility and accountability by assigning managing directors. Although Solomon had witnessed failure with the old Lehman Brothers new business development program, he felt strongly that a more disciplined approach would succeed. It involved a careful allocation of select Fortune 500 target accounts among the senior bankers. Its progress was monitored by Solomon and Lewis reading the Call Reports the bankers submitted. A "Matrix System" of monthly management reports was developed to measure the coverage intensity of individual bankers based upon the number of Call Reports they each produced.

There were some problems with bankers' adherence to the program at the onset. According to Lewis,

Some guys resisted the focus on calling on larger, longer-to-develop clients; some resisted supervision and did not submit Call Reports; and some tried to manipulate the system by submitting a Call Report for every trivial contact--up to 200 a month! Peter and I figured we created our own monster by focusing on the number of reports submitted. It was a learning experience all around.

Research Associate Lori Ann Levaggi prepared this case under the supervision of Associate Professor Todd D. Jick as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

Over time, however, the bankers not only became more accommodating, but endorsed the effort quite enthusiastically with the first blush of success. The calling program was monitored in terms of: (1) frequency of contact with the corporate prospect; (2) the cross-selling effort of all disciplines working in tandem, e.g., commercial paper; mergers and acquisitions; international, etc.; (3) lead or participation in actual transactions; and (4) the specific approach determined by the relationship managing director as summarized in his annual business plan. During all of 1986 about 45,000 Call Reports were submitted by the division's 200 or so senior bankers. For the year, 56% of all revenues came from organizations who had not done business with the firm or its predecessors within, at least, the prior three years.

Management Control Systems

Consistent with the calling program's accountability mechanisms, Lewis and Solomon also decided that formal strategic business plans be submitted by, and reviewed with, the heads of each business unit. This sent a message throughout the division that long-term planning and targeting was being taken seriously and underscored to the business unit heads that they would be held accountable for their performance as managers.

The "CORE System" was launched in the beginning of 1987 as a successor to the Matrix System. This system gave bankers a weekly opportunity to record client contacts without having to always write Call Reports and, for the first time, to capture concise information on project activities. The "CORE System" compiled and organized each week for managerial review the huge amounts of data on client and target calling programs, and the status of the hundreds of active engagements and revenue projections. Serving Lewis, Solomon, and the business unit heads as well, the CORE System reports and the Call Reports provided an almost continuous perspective on the performance of the individual bankers and facilitated their evaluation.

Compensation

Solomon and Lewis decided on a compensation plan which subjectively evaluated each individual on the basis of their actual performance relative to the expectations for their particular roles and level of seniority in the organization, rather than having any strict formula for computing performance. A subjective approach was deemed necessary because almost everyone in the division had components of their job responsibilities which were not directly measurable by short-term revenue generation and because most activities represented the cooperative efforts of many individuals. Also, a subjective approach was consistent with encouraging senior bankers to take a multiyear perspective in their pursuit of new Fortune 500 clients.

A proper subjective evaluation approach required gathering performance impressions about a large number of people from a large number of people and proved to be a very time-consuming process. The objective

was to have a process that appeared internally fair and consistent and externally competitive. Commenting on the plan, Solomon revealed:

For 1985, some people at Shearson Lehman Brothers got paid ten times what others at the same level got. At Lehman Brothers, the biggest spread in bonuses was about one and one half. We were able to do this because we had much better data available to judge what people were and were not doing. The differences in compensation between individuals were generally accepted because it was obvious to the organization that the compensation decision process was much more objective and extensive than previously had been used at Lehman Brothers. Also, in 1985 and 1986, business was good and many people were compensated at levels higher than they had ever experienced.

Relocation of Corporate Finance

Finally Solomon and Lewis decided against scaling down and relocating a major part of the corporate finance department to the trading desk. It was considered too radical a departure, with an excessively high risk-reward ratio. There were also innumerable physical constraints to moving so many people to the already-congested trading floors. According to Solomon, "We didn't have to do it and everyone resisted it since the Street in my opinion was not ready for it then. Incidentally, I think it will happen, and we could do it now, but not back then."

1986 Business Results

With the advent of 1986 came new hopes for the success of the investment banking division at Shearson Lehman Brothers. For 1985, industry rankings had improved. Shearson Lehman Brothers placed second only to Salomon Brothers and ahead of Merrill Lynch in the dollar value of all equity issues managed or co-managed for the year. In overall rankings for all issues managed or co-managed, Shearson Lehman Brothers ranked sixth.¹ Concerning this high ranking, Solomon recalled, "We had combined the two firms' strengths and were going forward into the top tier. We could have been ranked in the nonbulge bracket like Kidder Peabody or Smith Barney, but instead we are right up there with Goldman and Salomon!"

Looking Ahead

Reflecting on the process of merging two companies, Leonard Miller, veteran of five mergers and a Shearson Lehman managing director, felt strongly that there was a discipline to merging. Miller, who had been responsible for coordinating administration operations for investment banking explained:

¹Securities Data Corporation.

Two things have to happen at the-outset of a merger. As quickly as possible the infrastructure has to be attended to or everything else will fail. This means the physical integration, codifying disparate policies and procedures and installing communications and information systems. Simultaneously, the individual hand-holding and the personal soothing of the people must take place. This is made easier when, from experience, you can predict the same range of human emotions that always seem to arise in any large population involved in a merger.

Peter Solomon, whose perspective was shaped by the need to lead the division to new areas of business, had a different point of view. He believed that the most critical issue was to save the franchise of the business and to move the organization forward with common purpose. Solomon concurred with some advice about managing change from a friend and colleague, Peter Dawkins:

Remember that every morning people will be looking at you and if you are smiling they will be up, and if you are frowning, you will destroy them. You have to squeeze and release, meaning put great pressure on to get things accomplished, but then remember that you have to release for a time.

Solomon said the advice was absolutely right on both counts. "You can only move an organization so far quickly."

May 1987 came and went and none of the former Lehman people chose to leave the firm when the noncompete agreements expired. On January 4, 1988, Shearson Lehman Brothers acquired E.F. Hutton Group Inc., for \$961 million.

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STANDARD REFERENCE

A New Strategy for Job Enrichment

J. Richard Hackman, Greg Oldham,
Robert Janson, and Kenneth Purdy

A New Strategy for Job Enrichment

Practitioners of job enrichment have been living through a time of excitement, even euphoria. Their craft has moved from the psychology and management journals to the front page and the Sunday supplement. Job enrichment, which began with the pioneering work of Herzberg and his associates, originally was intended as a means to increase the motivation and satisfaction of people at work—and to improve productivity in the bargain.¹⁻⁵ Now it is being acclaimed in the popular press as a cure for problems ranging from inflation to drug abuse.

Much current writing about job enrichment is enthusiastic, sometimes even messianic, about what it can accomplish. But the hard questions of exactly what should be done to improve jobs, and how, tend to be glossed over. Lately, because the harder questions have not been dealt with adequately, critical winds have begun to blow. Job enrichment has been described as yet another “management fad,” as “nothing new,” even as a fraud. And reports of job-enrichment failures are beginning to appear in management and psychology journals.

This article attempts to redress the excesses that have characterized some of the recent writings about job enrichment. As the technique increases in popularity as a management tool, top managers inevitably will find themselves making

decisions about its use. The intent of this paper is to help both managers and behavioral scientists become better able to make those decisions on a solid basis of fact and data.

Succinctly stated, we present here a new strategy for going about the redesign of work. The strategy is based on three years of collaborative work and cross-fertilization among the authors—two of whom are academic researchers and two of whom are active practitioners in job enrichment. Our approach is new, but it has been tested in many organizations. It draws on the contributions of both management practice and psychological theory, but it is firmly in the middle ground between them. It builds on and complements previous work by Herzberg and others, but provides for the first time a set of tools for *diagnosing* existing jobs—and a map for translating the diagnostic results into specific action steps for change.

What we have, then, is the following:

1. A theory that specifies when people will get personally “turned on” to their work. The theory shows what kinds of jobs are most likely to generate excitement and commitment about work, and what kinds of employees it works best for.

2. A set of action steps for job enrichment based on the theory, which prescribe in concrete

terms what to do to make jobs more motivating for the people who do them.

3. Evidence that the theory holds water and that it can be used to bring about measurable—and sometimes dramatic—improvements in employee work behavior, in job satisfaction, and in the financial performance of the organizational unit involved.

The Theory Behind the Strategy

What makes people get turned on to their work? For workers who are really prospering in their jobs, work is likely to be a lot like play. Consider, for example, a golfer at a driving range, practicing to get rid of a hook. His activity is *meaningful* to him; he has chosen to do it because he gets a “kick” from testing his skills by playing the game. He knows that he alone is *responsible* for what happens when he hits the ball. And he has *knowledge of the results* within a few seconds.

Behavioral scientists have found that the three “psychological states” experienced by the golfer in the above example also are critical in determining a person’s motivation and satisfaction on the job.

● *Experienced meaningfulness*: The individual

J. Richard Hackman is Associate Professor of Administrative Sciences and of Psychology at Yale University. He is the author of numerous articles on organizational behavior and co-author of the recent book *Behavior in Organizations*.

Greg Oldham is Assistant Professor of Business Administration at the University of Illinois. His work has been published in several leading journals, and his current research interests include leadership, job design, and motivation.

Robert Janson is Vice-President of Roy W. Walters & Associates, a consulting firm specializing in applications of the behavioral sciences to the solution of organizational problems. He has contributed numerous articles to personnel and training journals, as well as to books on motivation and work design.

Kenneth Purdy is a senior associate with Roy W. Walters & Associates. He has written numerous articles on job design and the quality of work.

must perceive his work as worthwhile or important by some system of values he accepts.

● *Experienced responsibility*: He must believe that he personally is accountable for the outcomes of his efforts.

● *Knowledge of results*: He must be able to determine, on some fairly regular basis, whether or not the outcomes of his work are satisfactory.

When these three conditions are present, a person tends to feel very good about himself when he performs well. And those good feelings will prompt him to try to continue to do well—so he can continue to earn the positive feelings in the future. That is what is meant by “internal motivation”—being turned on to one’s work because of the positive internal feelings that are generated by doing well, rather than being dependent on external factors (such as incentive pay or compliments from the boss) for the motivation to work effectively.

What if one of the three psychological states is missing? Motivation drops markedly. Suppose, for example, that our golfer has settled in at the driving range to practice for a couple of hours. Suddenly a fog drifts in over the range. He can no longer see if the ball starts to tail off to the left a hundred yards out. The satisfaction he got from hitting straight down the middle—and the motivation to try to correct something whenever he didn’t—are both gone. If the fog stays, it’s likely that he soon will be packing up his clubs.

The relationship between the three psychological states and on-the-job outcomes is illustrated in Figure 1. When all three are high, then in-

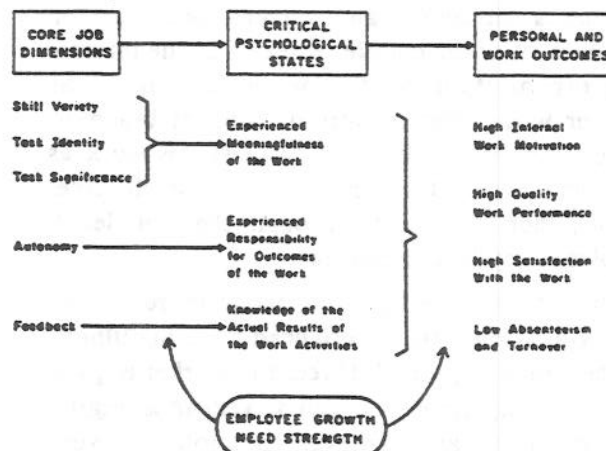


Figure 1. Relationships among core job dimensions, critical psychological states, and on-the-job outcomes.

ternal work motivation, job satisfaction, and work quality are high, and absenteeism and turnover are low.

What job characteristics make it happen? Recent research has identified five "core" characteristics of jobs that elicit the psychological states described above.^{6,8} These five core job dimensions provide the key to objectively measuring jobs and to changing them so that they have high potential for motivating people who do them.

◆ **Toward meaningful work.** Three of the five core dimensions contribute to a job's meaningfulness for the worker:

1. **Skill Variety**—the degree to which a job requires the worker to perform activities that challenge his skills and abilities. When even a single skill is involved, there is at least a seed of potential meaningfulness. When several are involved, the job has the potential of appealing to more of the whole person, and also of avoiding the monotony of performing the same task repeatedly, no matter how much skill it may require.

2. **Task Identity**—the degree to which the job requires completion of a "whole" and identifiable piece of work—doing a job from beginning to end with a visible outcome. For example, it is clearly more meaningful to an employee to build complete toasters than to attach electrical cord after electrical cord, especially if he never sees a completed toaster. (Note that the whole job, in this example, probably would involve greater skill variety as well as task identity.)

3. **Task Significance**—the degree to which the job has a substantial and perceivable impact on the lives of other people, whether in the immediate organization or the world at large. The worker who tightens nuts on aircraft brake assemblies is more likely to perceive his work as significant than the worker who fills small boxes with paper clips—even though the skill levels involved may be comparable.

Each of these three job dimensions represents an important route to experienced meaningfulness. If the job is high in all three, the worker is quite likely to experience his job as very meaningful. It is not necessary, however, for a job to be very high in all three dimensions. If the job is low in

any one of them, there will be a drop in overall experienced meaningfulness. But even when two dimensions are low the worker may find the job meaningful if the third is high enough.

◆ **Toward personal responsibility.** A fourth core dimension leads a worker to experience increased responsibility in his job. This is *autonomy*, the degree to which the job gives the worker freedom, independence, and discretion in scheduling work and determining how he will carry it out. People in highly autonomous jobs know that they are personally responsible for successes and failures. To the extent that their autonomy is high, then, how the work goes will be felt to depend more on the individual's own efforts and initiatives—rather than on detailed instructions from the boss or from a manual of job procedures.

◆ **Toward knowledge of results.** The fifth and last core dimension is *feedback*. This is the degree to which a worker, in carrying out the work activities required by the job, gets information about the effectiveness of his efforts. Feedback is most powerful when it comes directly from the work itself—for example, when a worker has the responsibility for gauging and otherwise checking a component he has just finished, and learns in the process that he has lowered his reject rate by meeting specifications more consistently.

◆ **The overall "motivating potential" of a job.**

Figure 1 shows how the five core dimensions combine to affect the psychological states that are critical in determining whether or not an employee will be internally motivated to work effectively. Indeed, when using an instrument to be described later, it is possible to compute a "motivating potential score" (MPS) for any job. The MPS provides a single summary index of the degree to which the objective characteristics of the job will prompt high internal work motivation. Following the theory outlined above, a job high in motivating potential must be high in at least one (and hopefully more) of the three dimensions that lead to experienced meaningfulness and high in both autonomy and feedback as well. The MPS provides a quantitative index of the degree to which this is in fact the case (see Appendix for detailed formula). As will be seen

later, the MPS can be very useful in diagnosing jobs and in assessing the effectiveness of job-enrichment activities.

Does the theory work for everybody? Unfortunately not. Not everyone is able to become internally motivated in his work, even when the motivating potential of a job is very high indeed.

Research has shown that the *psychological needs* of people are very important in determining who can (and who cannot) become internally motivated at work. Some people have strong needs for personal accomplishment, for learning and developing themselves beyond where they are now, for being stimulated and challenged, and so on. These people are high in "growth-need strength."

Figure 2 shows diagrammatically the proposition

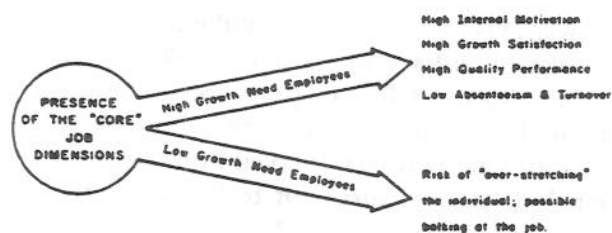


Figure 2. The moderating effect of employee growth-need strength.

that individual growth needs have the power to moderate the relationship between the characteristics of jobs and work outcomes. Many workers with high growth needs will turn on eagerly when they have jobs that are high in the core dimensions. Workers whose growth needs are not so strong may respond less eagerly—or, at first, even balk at being "pushed" or "stretched" too far.

Psychologists who emphasize human potential argue that everyone has within him at least a spark of the need to grow and develop personally. Steadily accumulating evidence shows, however, that unless that spark is pretty strong, chances are it will get snuffed out by one's experiences in typical organizations. So, a person who has worked for twenty years in stultifying jobs may find it difficult or impossible to become internally motivated overnight when given the opportunity.

We should be cautious, however, about creating rigid categories of people based on their meas-

ured growth-need strength at any particular time. It is true that we can predict from these measures who is likely to become internally motivated on a job and who will be less willing or able to do so. But what we do not know yet is whether or not the growth-need "spark" can be rekindled for those individuals who have had their growth needs dampened by years of growth-depressing experience in their organizations.

Since it is often the organization that is responsible for currently low levels of growth desires, we believe that the organization also should provide the individual with the chance to reverse that trend whenever possible, even if that means putting a person in a job where he may be "stretched" more than he wants to be. He can always move back later to the old job—and in the meantime the embers of his growth needs just might burst back into flame, to his surprise and pleasure, and for the good of the organization.

From Theory to Practice: A Technology for Job Enrichment

When job enrichment fails, it often fails because of inadequate *diagnosis* of the target job and employees' reactions to it. Often, for example, job enrichment is assumed by management to be a solution to "people problems" on the job and is implemented even though there has been no diagnostic activity to indicate that the root of the problem is in fact how the work is designed. At other times, some diagnosis is made—but it provides no concrete guidance about what specific aspects of the job require change. In either case, the success of job enrichment may wind up depending more on the quality of the intuition of the change agent—or his luck—than on a solid base of data about the people and the work.

In the paragraphs to follow, we outline a new technology for use in job enrichment which explicitly addresses the diagnostic as well as the action components of the change process. The technology has two parts: (1) a set of diagnostic tools that are useful in evaluating jobs and people's reactions to them prior to change—and in pinpointing exactly what aspects of specific jobs are most critical to a successful change attempt; and (2) a set of "implementing concepts"

that provide concrete guidance for action steps in job enrichment. The implementing concepts are tied directly to the diagnostic tools; the output of the diagnostic activity specifies which action steps are likely to have the most impact in a particular situation.

The diagnostic tools. Central to the diagnostic procedure we propose is a package of instruments to be used by employees, supervisors, and outside observers in assessing the target job and employees' reactions to it.⁹ These instruments gauge the following:

1. The objective characteristics of the jobs themselves, including both an overall indication of the "motivating potential" of the job as it exists (that is, the MPS score) and the score of the job on each of the five core dimensions described previously. Because knowing the strengths and weaknesses of the job is critical to any work-redesign effort, assessments of the job are made by supervisors and outside observers as well as the employees themselves—and the final assessment of a job uses data from all three sources.

2. The current levels of motivation, satisfaction, and work performance of employees on the job. In addition to satisfaction with the work itself, measures are taken of how people feel about other aspects of the work setting, such as pay, supervision, and relationships with co-workers.

3. The level of growth-need strength of the employees. As indicated earlier, employees who have strong growth needs are more likely to be more responsive to job enrichment than employees with weak growth needs. Therefore, it is important to know at the outset just what kinds of satisfactions the people who do the job are (and are not) motivated to obtain from their work. This will make it possible to identify which persons are best to start changes with, and which may need help in adapting to the newly enriched job.

What, then, might be the actual steps one would take in carrying out a job diagnosis using these tools? Although the approach to any particular diagnosis depends upon the specifics of the particular work situation involved, the sequence of questions listed below is fairly typical.

● *Step 1. Are motivation and satisfaction central to the problem?* Sometimes organizations undertake job enrichment to improve the work motivation and satisfaction of employees when in fact the real problem with work performance lies elsewhere—for example, in a poorly designed production system, in an error-prone computer, and so on. The first step is to examine the scores of employees on the motivation and satisfaction portions of the diagnostic instrument. (The questionnaire taken by employees is called the Job Diagnostic Survey and will be referred to hereafter as the JDS.) If motivation and satisfaction are problematic, the change agent would continue to Step 2; if not, he would look to other aspects of the work situation to identify the real problem.

● *Step 2. Is the job low in motivating potential?* To answer this question, one would examine the motivating potential score of the target job and compare it to the MPS's of other jobs to determine whether or not *the job itself* is a probable cause of the motivational problems documented in Step 1. If the job turns out to be low on the MPS, one would continue to Step 3; if it scores high, attention should be given to other possible reasons for the motivational difficulties (such as the pay system, the nature of supervision, and so on).

● *Step 3. What specific aspects of the job are causing the difficulty?* This step involves examining the job on each of the five core dimensions to pinpoint the specific strengths and weaknesses of the job as it is currently structured. It is useful at this stage to construct a "profile" of the target job, to make visually apparent where improvements need to be made. An illustrative profile for two jobs (one "good" job and one job needing improvement) is shown in Figure 3.

Job A is an engineering maintenance job and is high on all of the core dimensions; the MPS of this job is a very high 260. (MPS scores can range from 1 to about 350; an "average" score would be about 125.) Job enrichment would not be recommended for this job; if employees working on the job were unproductive and unhappy, the reasons are likely to have little to do with the nature or design of the work itself.

Job B, on the other hand, has many problems.

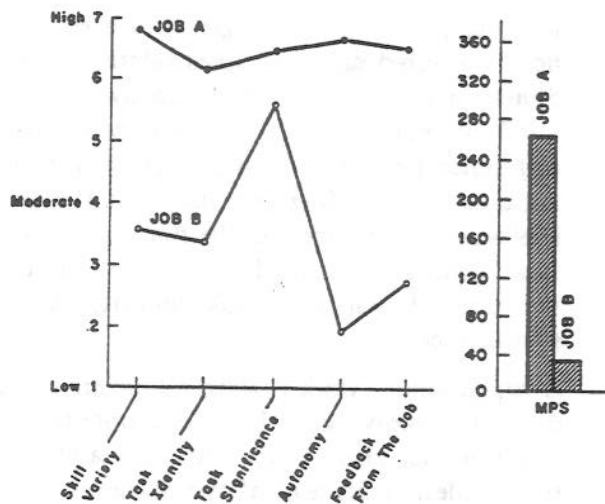


Figure 3. The JDS diagnostic profile for a "good" and a "bad" job.

This job involves the routine and repetitive processing of checks in the "back room" of a bank. The MPS is 30, which is quite low—and indeed, would be even lower if it were not for the moderately high task significance of the job. (Task significance is moderately high because the people are handling large amounts of other people's money, and therefore the quality of their efforts potentially has important consequences for their unseen clients.) The job provides the individuals with very little direct feedback about how effectively they are doing it; the employees have little autonomy in how they go about doing the job; and the job is moderately low in both skill variety and task identity.

For Job B, then, there is plenty of room for improvement—and many avenues to examine in planning job changes. For still other jobs, the avenues for change often turn out to be considerably more specific: for example, feedback and autonomy may be reasonably high, but one or more of the core dimensions that contribute to the experienced meaningfulness of the job (skill variety, task identity, and task significance) may be low. In such a case, attention would turn to ways to increase the standing of the job on these latter three dimensions.

● **Step 4. How "ready" are the employees for change?** Once it has been documented that there is need for improvement in the job—and the particularly troublesome aspects of the job have been identified—then it is time to begin to think about the specific action steps which will be

taken to enrich the job. An important factor in such planning is the level of growth needs of the employees, since employees high on growth needs usually respond more readily to job enrichment than do employees with little need for growth. The JDS provides a direct measure of the growth-need strength of the employees. This measure can be very helpful in planning how to introduce the changes to the people (for instance, cautiously versus dramatically), and in deciding who should be among the first group of employees to have their jobs changed.

In actual use of the diagnostic package, additional information is generated which supplements and expands the basic diagnostic questions outlined above. The point of the above discussion is merely to indicate the kinds of questions which we believe to be most important in diagnosing a job prior to changing it. We now turn to how the diagnostic conclusions are translated into specific job changes.

The implementing concepts. Five "implementing concepts" for job enrichment are identified and discussed below.¹⁰ Each one is a specific action step aimed at improving both the quality of the working experience for the individual and his work productivity. They are: (1) forming natural work units; (2) combining tasks; (3) establishing client relationships; (4) vertical loading; (5) opening feedback channels.

The links between the implementing concepts and the core dimensions are shown in Figure 4—which illustrates our theory of job enrichment, ranging from the concrete action steps through the core dimensions and the psychological states to the actual personal and work outcomes.

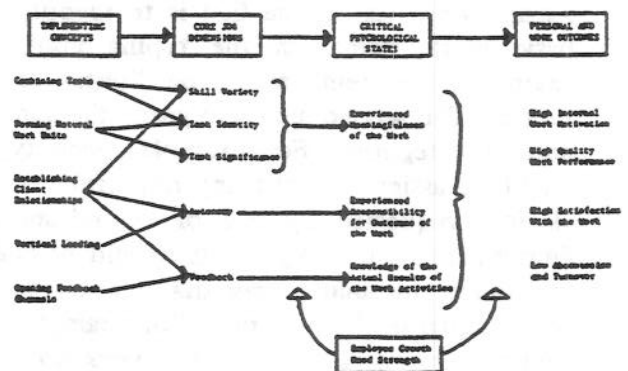


Figure 4. The full model: how use of the implementing concepts can lead to positive outcomes.

After completing the diagnosis of a job, a change agent would know which of the core dimensions were most in need of remedial attention. He could then turn to Figure 4 and select those implementing concepts that specifically deal with the most troublesome parts of the existing job. How this would take place in practice will be seen below.

♦ **Forming natural work units.** The notion of distributing work in some logical way may seem to be an obvious part of the design of any job. In many cases, however, the logic is one imposed by just about any consideration except jobholder satisfaction and motivation. Such considerations include technological dictates, level of worker training or experience, "efficiency" as defined by industrial engineering, and current workload. In many cases the cluster of tasks a worker faces during a typical day or week is natural to anyone *but* the worker.

For example, suppose that a typing pool (consisting of one supervisor and ten typists) handles all work for one division of a company. Jobs are delivered in rough draft or dictated form to the supervisor, who distributes them as evenly as possible among the typists. In such circumstances the individual letters, reports, and other tasks performed by a given typist in one day or week are randomly assigned. There is no basis for identifying with the work or the person or department for whom it is performed, or for placing any personal value upon it.

The principle underlying natural units of work, by contrast, is "ownership"—a worker's sense of continuing responsibility for an identifiable body of work. Two steps are involved in creating natural work units. The first is to identify the basic work items. In the typing pool, for example, the items might be "pages to be typed." The second step is to group the items in natural categories. For example, each typist might be assigned continuing responsibility for all jobs requested by one or several specific departments. The assignments should be made, of course, in such a way that workloads are about equal in the long run. (For example, one typist might end up with all the work from one busy department, while another handles jobs from several smaller units.)

At this point we can begin to see specifically how the job-design principles relate to the core dimensions (cf. Figure 4). The ownership fostered by natural units of work can make the difference between a feeling that work is meaningful and rewarding and the feeling that it is irrelevant and boring. As the diagram shows, natural units of work are directly related to two of the core dimensions: task identity and task significance.

A typist whose work is assigned naturally rather than randomly—say, by departments—has a much greater chance of performing a whole job to completion. Instead of typing one section of a large report, the individual is likely to type the whole thing, with knowledge of exactly what the product of the work is (task identity). Furthermore, over time the typist will develop a growing sense of how the work affects co-workers in the department serviced (task significance).

♦ **Combining tasks.** The very existence of a pool made up entirely of persons whose sole function is typing reflects a fractionalization of jobs that has been a basic precept of "scientific management." Most obvious in assembly-line work, fractionalization has been applied to non-manufacturing jobs as well. It is typically justified by efficiency, which is usually defined in terms of either low costs or some time-and-motion type of criteria.

It is hard to find fault with measuring efficiency ultimately in terms of cost-effectiveness. In doing so, however, a manager should be sure to consider *all* the costs involved. It is possible, for example, for highly fractionalized jobs to meet all the time-and-motion criteria of efficiency, but if the resulting job is so unrewarding that performing it day after day leads to high turnover, absenteeism, drugs and alcohol, and strikes, then productivity is really lower (and costs higher) than data on efficiency might indicate.

The principle of combining tasks, then, suggests that whenever possible existing and fractionalized tasks should be put together to form new and larger modules of work. At the Medfield, Massachusetts plant of Corning Glass Works the assembly of a laboratory hot plate has been re-

designed along the lines suggested here. Each hot plate now is assembled from start to finish by one operator, instead of going through several separate operations that are performed by different people.

Some tasks, if combined into a meaningfully large module of work, would be more than an individual could do by himself. In such cases, it is often useful to consider assigning the new, larger task to a small *team* of workers—who are given great autonomy for its completion. At the Racine, Wisconsin plant of Emerson Electric, the assembly process for trash disposal appliances was restructured this way. Instead of a sequence of moving the appliance from station to station, the assembly now is done from start to finish by one team. Such teams include both men and women to permit switching off the heavier and more delicate aspects of the work. The team responsible is identified on the appliance. In case of customer complaints, the team often drafts the reply.

As a job-design principle, task combination, like natural units of work, expands the task identity of the job. For example, the hot-plate assembler can see and identify with a finished product ready for shipment, rather than a nearly invisible junction of solder. Moreover, the more tasks that are combined into a single worker's job, the greater the variety of skills he must call on in performing the job. So task combination also leads directly to greater skill variety—the third core dimension that contributes to the overall experienced meaningfulness of the work.

◆ Establishing client relationships. One consequence of fractionalization is that the typical worker has little or no contact with (or even awareness of) the ultimate user of his product or service. By encouraging and enabling employees to establish direct relationships with the clients of their work, improvements often can be realized simultaneously on three of the core dimensions. Feedback increases, because of additional opportunities for the individual to receive praise or criticism of his work outputs directly. Skill variety often increases, because of the necessity to develop and exercise one's interpersonal skills in maintaining the client relationship. And autonomy can increase because the individual

often is given personal responsibility for deciding how to manage his relationships with the clients of his work.

Creating client relationships is a three-step process. First, the client must be identified. Second, the most direct contact possible between the worker and the client must be established. Third, criteria must be set up by which the client can judge the quality of the product or service he receives. And whenever possible, the client should have a means of relaying his judgments directly back to the worker.

The contact between worker and client should be as great as possible and as frequent as necessary. Face-to-face contact is highly desirable, at least occasionally. Where that is impossible or impractical, telephone and mail can suffice. In any case, it is important that the performance criteria by which the worker will be rated by the client must be mutually understood and agreed upon.

◆ Vertical loading. Typically the split between the "doing" of a job and the "planning" and "controlling" of the work has evolved along with horizontal fractionalization. Its rationale, once again, has been "efficiency through specialization." And once again, the excess of specialization that has emerged has resulted in unexpected but significant costs in motivation, morale, and work quality. In vertical loading, the intent is to partially close the gap between the doing and the controlling parts of the job—and thereby reap some important motivational advantages.

Of all the job-design principles, vertical loading may be the single most crucial one. In some cases, where it has been impossible to implement any other changes, vertical loading alone has had significant motivational effects.

When a job is vertically loaded, responsibilities and controls that formerly were reserved for higher levels of management are added to the job. There are many ways to accomplish this:

- Return to the job holder greater discretion in setting schedules, deciding on work methods, checking on quality, and advising or helping to train less experienced workers.
- Grant additional authority. The objective

should be to advance workers from a position of no authority or highly restricted authority to positions of reviewed, and eventually, near-total authority for his own work.

- **Time management.** The job holder should have the greatest possible freedom to decide when to start and stop work, when to break, and how to assign priorities.

- **Troubleshooting and crisis decisions.** Workers should be encouraged to seek problem solutions on their own, rather than calling immediately for the supervisor.

- **Financial controls.** Some degree of knowledge and control over budgets and other financial aspects of a job can often be highly motivating. However, access to this information frequently tends to be restricted. Workers can benefit from knowing something about the costs of their jobs, the potential effect upon profit, and various financial and budgetary alternatives.

When a job is vertically loaded it will inevitably increase in *autonomy*. And as shown in Figure 4, this increase in objective personal control over the work will also lead to an increased feeling of personal responsibility for the work, and ultimately to higher internal work motivation.

- ◆ **Opening feedback channels.** In virtually all jobs there are ways to open channels of feedback to individuals or teams to help them learn whether their performance is improving, deteriorating, or remaining at a constant level. While there are numerous channels through which information about performance can be provided, it generally is better for a worker to learn about his performance *directly as he does his job*—rather than from management on an occasional basis.

Job-provided feedback usually is more immediate and private than supervisor-supplied feedback, and it increases the worker's feelings of personal control over his work in the bargain. Moreover, it avoids many of the potentially disruptive interpersonal problems that can develop when the only way a worker has to find out how he is doing is through direct messages or subtle cues from the boss.

Exactly what should be done to open channels for job-provided feedback will vary from job to

job and organization to organization. Yet in many cases the changes involve simply removing existing blocks that isolate the worker from naturally occurring data about performance—rather than generating entirely new feedback mechanisms. For example:

- **Establishing direct client relationships** often removes blocks between the worker and natural external sources of data about his work.

- **Quality-control efforts** in many organizations often eliminate a natural source of feedback. The quality check on a product or service is done by persons other than those responsible for the work. Feedback to the workers—if there is any—is belated and diluted. It often fosters a tendency to think of quality as “someone else's concern.” By placing quality control close to the worker (perhaps even in his own hands), the quantity and quality of data about performance available to him can dramatically increase.

- **Tradition and established procedure** in many organizations dictate that records about performance be kept by a supervisor and transmitted up (not down) in the organizational hierarchy. Sometimes supervisors even check the work and correct any errors themselves. The worker who made the error never knows it occurred—and is denied the very information that could enhance both his internal work motivation and the technical adequacy of his performance. In many cases it is possible to provide standard summaries of performance records directly to the worker (as well as to his superior), thereby giving him personally and regularly the data he needs to improve his performance.

- **Computers and other automated operations** sometimes can be used to provide the individual with data now blocked from him. Many clerical operations, for example, are now performed on computer consoles. These consoles often can be programmed to provide the clerk with immediate feedback in the form of a CRT display or a printout indicating that an error has been made. Some systems even have been programmed to provide the operator with a positive feedback message when a period of error-free performance has been sustained.

Many organizations simply have not recognized

the importance of feedback as a motivator. Data on quality and other aspects of performance are viewed as being of interest only to management. Worse still, the *standards* for acceptable performance often are kept from workers as well. As a result, workers who would be interested in following the daily or weekly ups and downs of their performance, and in trying accordingly to improve, are deprived of the very guidelines they need to do so. They are like the golfer we mentioned earlier, whose efforts to correct his hook are stopped dead by fog over the driving range.

The Strategy in Action: How Well Does It Work?

So far we have examined a basic theory of how people get turned on to their work; a set of core dimensions of jobs that create the conditions for such internal work motivation to develop on the job; and a set of five implementing concepts that are the action steps recommended to boost a job on the core dimensions and thereby increase employee motivation, satisfaction, and productivity.

The remaining question is straightforward and important: *Does it work?* In reality, that question is twofold. First, does the theory itself hold water, or are we barking up the wrong conceptual tree? And second, does the change strategy really lead to measurable differences when it is applied in an actual organizational setting?

This section summarizes the findings we have generated to date on these questions.

Is the job-enrichment theory correct? In general, the answer seems to be yes. The JDS instrument has been taken by more than 1,000 employees working on about 100 diverse jobs in more than a dozen organizations over the last two years. These data have been analyzed to test the basic motivational theory—and especially the impact of the core job dimensions on worker motivation, satisfaction, and behavior on the job. An illustrative overview of some of the findings is given below.⁸

1. People who work on jobs high on the core dimensions are more motivated and satisfied than are people who work on jobs that score low on the dimensions. Employees with jobs high on the core dimensions (MPS scores greater than

240) were compared to those who held unmotivating jobs (MPS scores less than 40). As shown in Figure 5, employees with high MPS jobs were higher on (a) the three psychological states, (b) internal work motivation, (c) general satisfaction, and (d) "growth" satisfaction.

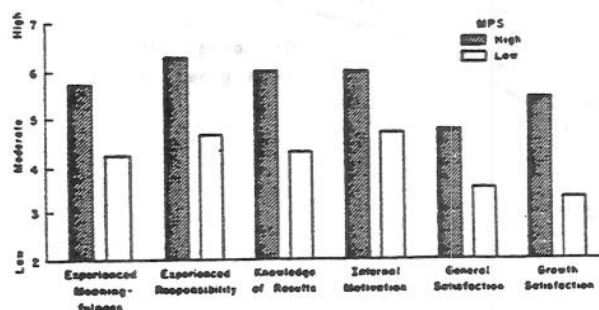


Figure 5. Employee reactions to jobs high and low in motivating potential for two banks and a steel firm.

2. Figure 6 shows that the same is true for measures of actual behavior at work—absenteeism and performance effectiveness—although less strongly so for the performance measure.

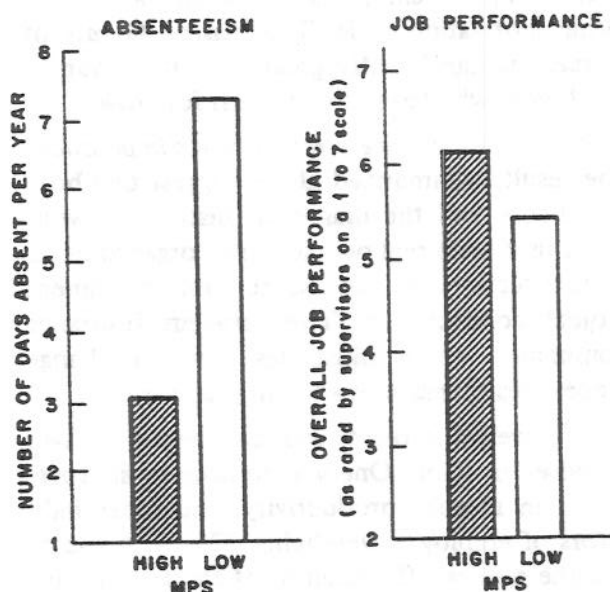


Figure 6. Absenteeism and job performance for employees with jobs high and low in motivating potential.

3. Responses to jobs high in motivating potential are more positive for people who have strong growth needs than for people with weak needs for growth. In Figure 7 the linear relationship between the motivating potential of a job and employees' level of internal work motivation is shown, separately for people with high versus

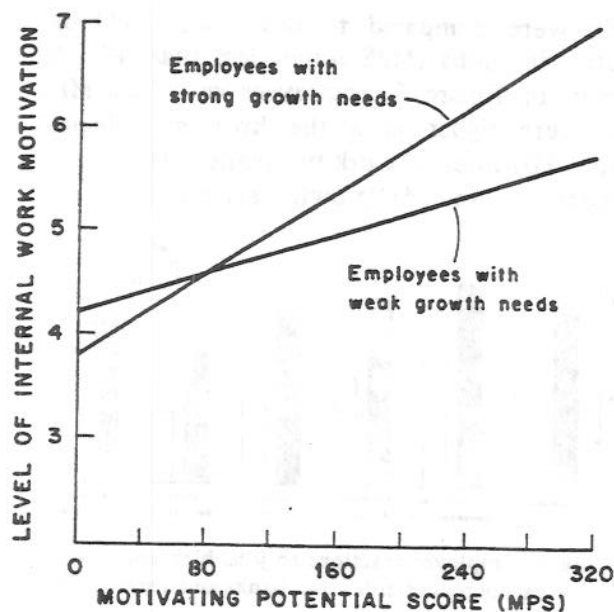


Figure 7. Relationship between the motivating potential of a job and the internal work motivation of employees. (Shown separately for employees with strong versus weak growth-need strength.)

low growth needs as measured by the JDS. While both groups of employees show increases in internal motivation as MPS increases, the *rate* of increase is significantly greater for the group of employees who have strong needs for growth.

How does the change strategy work in practice? The results summarized above suggest that both the theory and the diagnostic instrument work when used with real people in real organizations. In this section, we summarize a job-enrichment project conducted at The Travelers Insurance Companies, which illustrates how the change procedures themselves work in practice.

The Travelers project was designed with two purposes in mind. One was to achieve improvements in morale, productivity, and other indicators of employee well-being. The other was to test the general effectiveness of the strategy for job enrichment we have summarized in this article.

The work group chosen was a keypunching operation. The group's function was to transfer information from printed or written documents onto punched cards for computer input. The work group consisted of ninety-eight keypunch operators and verifiers (both in the same job classification), plus seven assignment clerks. All reported to a supervisor who, in turn, reported

to the assistant manager and manager of the data-input division.

The size of individual punching orders varied considerably, from a few cards to as many as 2,500. Some work came to the work group with a specified delivery date, while other orders were to be given routine service on a predetermined schedule.

Assignment clerks received the jobs from the user departments. After reviewing the work for obvious errors, omissions, and legibility problems, the assignment clerk parceled out the work in batches expected to take about one hour. If the clerk found the work not suitable for punching it went to the supervisor, who either returned the work to the user department or cleared up problems by phone. When work went to operators for punching, it was with the instruction, "Punch only what you see. Don't correct errors, no matter how obvious they look."

Because of the high cost of computer time, key-punched work was 100 percent verified—a task that consumed nearly as many man-hours as the punching itself. Then the cards went to the supervisor, who screened the jobs for due dates before sending them to the computer. Errors detected in verification were assigned to various operators at random to be corrected.

The computer output from the cards was sent to the originating department, accompanied by a printout of errors. Eventually the printout went back to the supervisor for final correction.

A great many phenomena indicated that the problems being experienced in the work group might be the result of poor motivation. As the only person performing supervisory functions of any kind, the supervisor spent most of his time responding to crisis situations, which recurred continually. He also had to deal almost daily with employees' salary grievances or other complaints. Employees frequently showed apathy or outright hostility toward their jobs.

Rates of work output, by accepted work-measurement standards, were inadequate. Error rates were high. Due dates and schedules frequently were missed. Absenteeism was higher than average, especially before and after week-ends and holidays.

The single, rather unusual exception was turnover. It was lower than the companywide average for similar jobs. The company has attributed this fact to a poor job market in the base period just before the project began, and to an older, relatively more settled work force—made up, incidentally, entirely of women.

The diagnosis. Using some of the tools and techniques we have outlined, a consulting team from the Management Services Department and from Roy W. Walters & Associates concluded that the keypunch-operator's job exhibited the following serious weaknesses in terms of the core dimensions.

- Skill variety: there was none. Only a single skill was involved—the ability to punch adequately the data on the batch of documents.
- Task identity: virtually nonexistent. Batches were assembled to provide an even workload, but not whole identifiable jobs.
- Task significance: not apparent. The keypunching operation was a necessary step in providing service to the company's customers. The individual operator was isolated by an assignment clerk and a supervisor from any knowledge of what the operation meant to the using department, let alone its meaning to the ultimate customer.
- Autonomy: none. The operators had no freedom to arrange their daily tasks to meet schedules, to resolve problems with the using department, or even to correct, in punching, information that was obviously wrong.
- Feedback: none. Once a batch was out of the operator's hands, she had no assured chance of seeing evidence of its quality or inadequacy.

Design of the experimental trial. Since the diagnosis indicated that the motivating potential of the job was extremely low, it was decided to attempt to improve the motivation and productivity of the work group through job enrichment. Moreover, it was possible to design an experimental test of the effects of the changes to be introduced: the results of changes made in the target work group were to be compared with trends in a control work group of similar size and demographic make-up. Since the control group was located more than a mile away, there

appeared to be little risk of communication between members of the two groups.

A base period was defined before the start of the experimental trial period, and appropriate data were gathered on the productivity, absenteeism, and work attitudes of members of both groups. Data also were available on turnover; but since turnover was already below average in the target group, prospective changes in this measure were deemed insignificant.

An educational session was conducted with supervisors, at which they were given the theory and implementing concepts and actually helped to design the job changes themselves. Out of this session came an active plan consisting of about twenty-five change items that would significantly affect the design of the target jobs.

The implementing concepts and the changes. Because the job as it existed was rather uniformly low on the core job dimensions, all five of the implementing concepts were used in enriching it.

- Natural units of work. The random batch assignment of work was replaced by assigning to each operator continuing responsibility for certain accounts—either particular departments or particular recurring jobs. Any work for those accounts now always goes to the same operator.
- Task combination. Some planning and controlling functions were combined with the central task of keypunching. In this case, however, these additions can be more suitably discussed under the remaining three implementing concepts.
- Client relationships. Each operator was given several channels of direct contact with clients. The operators, not their assignment clerks, now inspect their documents for correctness and legibility. When problems arise, the operator, not the supervisor, takes them up with the client.
- Feedback. In addition to feedback from client contact, the operators were provided with a number of additional sources of data about their performance. The computer department now returns incorrect cards to the operators who punched them, and operators correct their own errors. Each operator also keeps her own file of copies of her errors. These can be reviewed to determine trends in error frequency and types of errors. Each operator receives weekly a compu-

ter printout of her errors and productivity, which is sent to her directly, rather than given to her by the supervisor.

- **Vertical loading.** Besides consulting directly with clients about work questions, operators now have the authority to correct obvious coding errors on their own. Operators may set their own schedules and plan their daily work, as long as they meet schedules. Some competent operators have been given the option of not verifying their work and making their own program changes.

Results of the trial. The results were dramatic. The number of operators declined from ninety-eight to sixty. This occurred partly through attrition and partly through transfer to other departments. Some of the operators were promoted to higher-paying jobs in departments whose cards they had been handling—something that had never occurred before. Some details of the results are given below.

- **Quantity of work.** The control group, with no job changes made, showed an increase in productivity of 8.1 percent during the trial period. The experimental group showed an increase of 39.6 percent.

- **Error rates.** To assess work quality, error rates were recorded for about forty operators in the experimental group. All were experienced, and all had been in their jobs before the job-enrichment program began. For two months before the study, these operators had a collective error rate of 1.53 percent. For two months toward the end of the study, the collective error rate was 0.99 percent. By the end of the study the number of operators with poor performance had dropped from 11.1 percent to 5.5 percent.

- **Absenteeism.** The experimental group registered a 24.1 percent decline in absences. The control group, by contrast, showed a 29 percent increase.

- **Attitudes toward the job.** An attitude survey given at the start of the project showed that the two groups scored about average, and nearly identically, in nine different areas of work satisfaction. At the end of the project the survey was repeated. The control group showed an insignificant 0.5 percent improvement, while the experi-

mental group's overall satisfaction score rose 16.5 percent.

- **Selective elimination of controls.** Demonstrated improvements in operator proficiency permitted them to work with fewer controls. Travelers estimates that the reduction of controls had the same effect as adding seven operators—a saving even beyond the effects of improved productivity and lowered absenteeism.

- **Role of the supervisor.** One of the most significant findings in the Travelers experiment was the effect of the changes on the supervisor's job, and thus on the rest of the organization. The operators took on many responsibilities that had been reserved at least to the unit leaders and sometimes to the supervisor. The unit leaders, in turn, assumed some of the day-to-day supervisory functions that had plagued the supervisor. Instead of spending his days supervising the behavior of subordinates and dealing with crises, he was able to devote time to developing feedback systems, setting up work modules and spearheading the enrichment effort—in other words, managing. It should be noted, however, that helping supervisors change their own work activities when their subordinates' jobs have been enriched is itself a challenging task. And if appropriate attention and help are not given to supervisors in such cases, they rapidly can become disaffected—and a job-enrichment "backlash" can result.¹¹

Summary. By applying work-measurement standards to the changes wrought by job enrichment—attitude and quality, absenteeism, and selective administration of controls—Travelers was able to estimate the total dollar impact of the project. Actual savings in salaries and machine rental charges during the first year totaled \$64,305. Potential savings by further application of the changes were put at \$91,937 annually. Thus, by almost any measure used—from the work attitudes of individual employees to dollar savings for the company as a whole—The Travelers test of the job-enrichment strategy proved a success.

Conclusions

In this article we have presented a new strategy for the redesign of work in general and for job

enrichment in particular. The approach has four main characteristics:

1. It is grounded in a basic psychological theory of what motivates people in their work.
2. It emphasizes that planning for job changes should be done on the basis of *data* about the jobs and the people who do them—and a set of diagnostic instruments is provided to collect such data.
3. It provides a set of specific implementing concepts to guide actual job changes, as well as a set of theory-based rules for selecting *which* action steps are likely to be most beneficial in a given situation.
4. The strategy is buttressed by a set of findings showing that the theory holds water, that the diagnostic procedures are practical and informative, and that the implementing concepts can lead to changes that are beneficial both to organizations and to the people who work in them.

We believe that job enrichment is moving beyond the stage where it can be considered "yet another management fad." Instead, it represents a potentially powerful strategy for change that can help organizations achieve their goals for higher quality work—and at the same time further the equally legitimate needs of contemporary employees for a more meaningful work experience. Yet there are pressing questions about job enrichment and its use that remain to be answered.

Prominent among these is the question of employee participation in planning and implementing work redesign. The diagnostic tools and implementing concepts we have presented are neither designed nor intended for use only by management. Rather, our belief is that the effectiveness of job enrichment is likely to be enhanced when the tasks of diagnosing and changing jobs are undertaken *collaboratively* by management and by the employees whose work will be affected.

Moreover, the effects of work redesign on the broader organization remain generally uncharted. Evidence now is accumulating that when jobs are changed, turbulence can appear in the surrounding organization—for example, in supervisory-subordinate relationships, in pay and

benefit plans, and so on. Such turbulence can be viewed by management either as a problem with job enrichment, or as an opportunity for further and broader organizational development by teams of managers and employees. To the degree that management takes the latter view, we believe, the oft-espoused goal of achieving basic organizational change through the redesign of work may come increasingly within reach.

The diagnostic tools and implementing concepts we have presented are useful in deciding on and designing basic changes in the jobs themselves. They do not address the broader issues of who plans the changes, how they are carried out, and how they are followed up. The way these broader questions are dealt with, we believe, may determine whether job enrichment will grow up—or whether it will die an early and unfortunate death, like so many other fledgling behavioral-science approaches to organizational change.

Appendix:

For the algebraically inclined, the Motivating Potential Score is computed as follows

$$MPS = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \right]$$

$$X \text{ Autonomy} \quad X \text{ Feedback}$$

It should be noted that in some cases the MPS score can be too high for positive job satisfaction and effective performance—in effect overstimulating the person who holds the job. This paper focuses on jobs which are toward the low end of the scale—and which potentially can be improved through job enrichment.

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27. Lordstown Plant of General Motors*

Introduction

In December 1971, the management of the Lordstown Plant was very much concerned with an unusually high rate of defective Vegas coming off the assembly line. For the previous several weeks, the lot with a capacity of 2,000 cars had been filled with Vegas which were waiting for rework before they could be shipped out to the dealers around the country.

The management was particularly disturbed by the fact that many of the defects were not the kinds of quality deficiency normally expected in an assembly production of automobiles.¹ There was a countless number of Vegas with their windshields broken, upholstery slashed, ignition keys broken, signal levers bent, rear-view mirrors broken, or carburetors clogged with washers. There were cases in which, as the Plant Manager put it, "the whole engine blocks passed by 40 men without any work done on them."

Since then, the incident in the Lordstown Plant has been much publicized in news media, drawing public interest. It has also been frequently discussed in the classroom and in the academic circles. While some people viewed the event as "young worker revolt," others reacted to it as a simple "labor problem." Some viewed it as "worker sabotage," and others called it "industrial Woodstock."

This case describes some background and important incidents leading to this much publicized and discussed industrial event.

The General Motors Corporation is the nation's largest manufacturer. The Company is a leading example among many industrial organizations which have achieved organizational growth and success through decentralization. The philosophy of decentralization has been one of the most valued traditions in General Motors from the days of Alfred Sloan in the 1930's through Charles Wilson and Harlow Curtice in the 1950's and up to recent years.

Under decentralized management, each of the company's car divisions, Cadillac, Buick, Oldsmobile, Pontiac and Chevrolet, was given a maximum autonomy in the management of its manufacturing and marketing operations. The assembly operations were no exception, each division managing its own assembly work. The car bodies built by Fisher Body were assembled in various locations under maximum control and coordination between the Fisher Body and each car division.

In the mid-1960's, however, the decentralization in divisional assembly operations was subject to a critical review. At the divisional level, the

* This case was prepared by Hak-Chong Lee, State University of New York at Albany, and is used here with his permission.

This case was developed for instructional purposes from published sources and interviews with the General Motors Assembly Division officials in Warren, Michigan, and Lordstown, Ohio. The case was read and minor corrections were made by the Public Relations Office of the GMAD. However, the author is solely responsible for the content of the case. The author appreciates the cooperation of General Motors. He also appreciates the suggestions of Professor Anthony Athos of Harvard and Mr. John Grix of General Motors which improved this case.

1. The normal defect rate requiring rework was fluctuating between 1-2% at the time.

SCIENCE OF MANAGEMENT

company was experiencing serious problems of worker absenteeism and increasing cost with declines in quality and productivity. They were reflected in the overall profit margins which were declining from 10% to 7% in the late 1960's. The autonomy in the divided management in body manufacturing and assembly operations, in separate locations in many cases, became questionable under the declining profit situation.

In light of these developments, General Motors began to consolidate in some instances the divided management of body and chassis assembly operations into a single management under the already existing General Motors Assembly Division (GMAD) in order to better coordinate the two operations. The GMAD was given an overall responsibility to integrate the two operations in these instances and see that the numerous parts and components going into car assembly get to the right places in the right amounts at the right times.²

The General Motors Assembly Division (GMAD)

The GMAD was originally established in the mid 1930's, when the company needed an additional assembly plant to meet the increasing demands for Buick, Oldsmobile, and Pontiac automobiles. The demands for these cars were growing so much beyond the available capacity at the time that the company began, for the first time, to build an assembly plant on the west coast which could turn out all three lines of cars rather than an individual line. As this novel approach became successful, similar plants turning out a multiple line of cars were built in seven other locations in the east, south and midwest. In the 1960's the demand for Chevrolet production also increased, and some Buick-Oldsmobile-Pontiac plants began to assemble Chevrolet products. Accordingly, the name of the division was changed to GMAD in 1965.

In order to improve the quality and productivity, the GMAD increased its control over the operations of body manufacturing and assembly. It reorganized jobs, launched programs to improve efficiency, and reduced the causes of defects which required repairs and rework. With many positive results attained under the GMAD management, the company extended the single management concept to six more assembly locations in 1968 which had been run by the Fisher Body and Chevrolet Divisions. In 1971, the GM further extended the concept to four additional Chevrolet-Fisher Body assembly facilities, consolidating the separate management under which the body and chassis assembly had been operating. One of these plants was the Lordstown Plant.

The series of consolidation brought to eighteen the number of assembly plants operated by the GMAD. In terms of total production, they were producing about 75% of all cars and 67% of trucks built by the GM. Also in 1971, one of the plants under the GMAD administration began building certain Cadillac models, thus involving GMAD in production of automobiles

2. A typical assembly plant has five major assembly lines—hard trim, soft trim, body, paint, and final—supported by sub-assembly lines which feed to the main lines such components as engines, transmissions, wheels and tires, radiators, gas tanks, front and sheet metal, and scores of other items. The average vehicle on assembly lines has more than 5,500 items with quality checks numbering 5 million in a typical GMAD assembly plant in a 16-hour a day operation.

for each of the GM's five domestic car divisions as well as trucks for both Chevrolet and GMC Truck and Coach Division.

The Lordstown Complex

The Lordstown complex is located in Trumbull County in Ohio, about 15 miles west of Youngstown and 30 miles east of Akron. It consists of the Vega assembly plant, the van-truck assembly plant, and Fisher Body metal fabricating plant, occupying about 1,000 acres of land. GMAD which operates the Vega and van-truck assembly plants is also located in the Lordstown complex. The three plants are in the heart of the heavy industrial triangle of Youngstown, Akron and Cleveland. With Youngstown as a center of steel production, Akron the home of rubber industries, and Cleveland as a major center for heavy manufacturing, the Lordstown complex commands a good strategic and logistic location for automobile assembly.

The original assembly plant was originally built in 1964-1966 to assemble Impalas. But in 1970 it was converted into Vega assembly with extensive arrangements. The van-truck assembly plant was constructed in 1969, and the Fisher Body metal fabricating plant was further added in 1970 to carry out stamping operations to produce sheet metal components used in Vega and van assemblies. In October 1971, the Chevrolet Vega and van-assembly plants and Fisher Body Vega assembly plants which had been operating under separate management were merged into a single jurisdiction of the GMAD.

Work Force at the Lordstown Plant

There are over 11,400 employees working in the Lordstown Plant (as of 1973). Approximately 6,000 people, of whom 5,500 are on hourly payroll, work in the Vega assembly plant. About 2,600 workers, 2,100 of them paid hourly, work in van-truck assembly. As members of the United Auto Workers Union, Local 1112, the workers command good wages and benefits. They start out on the line at about \$5.00 an hour, gets a 10¢ an hour increase within 30 days, and another 10¢ after 90 days. Benefits come to \$2.50 an hour.³ The supplemental unemployment benefits virtually guarantee the worker's wages throughout the year. If the worker is laid off, he gets more than 90% of his wages for 52 weeks. He is also eligible for up to six days for holidays, excused absence or bereavement, and up to four weeks vacation.

The work force at the plant is almost entirely made up of local people with 92% coming from the immediate area of a 20-mile radius. Lordstown itself is a small rural town of about 500 residents. A sizable city closest to the plant is Warren, 5 miles away, which together with Youngstown supplies about two-thirds of the work force. The majority of the workers (57.5%) are married, 7.6% are home owners, and 20.2% are buying their homes. Of those who do not own their own homes (72%), over one-half are still living with their parents. The rest live in rented houses or apartments.

The workers in the plant are generally young. Although various news media reported the average worker age as 24 years old, and in some parts of the plant as 22 years, the company records show that the overall average

3. In GM, the average worker on the line earns \$12,500 a year with fringe benefits of \$3,000.

worker age was somewhat above 29 years as of 1971-72. The national average is 42. The work force at Lordstown is the second youngest among GM's 25 assembly plants around the country. The fact that the Lordstown plant is the GM's newest assembly plant may partly explain the relatively young work force.

The educational profile of the Lordstown workers indicates that only 22.2% have less than a high school education. Nearly two-thirds or 62% are high school graduates, and 16% are either college graduates or have attended college. Another 26% have attended trade school. The average education of 13.2 years makes the Lordstown workers among the best educated in GM's assembly plants.

The Vega Assembly Line

Conceived as a major competitive product against the increasing influx of foreign cars which were being produced at as low as one-fourth the labor rate in this country, the Vega was specifically designed with a maximum production efficiency and economy in mind. From the initial stages of planning, the Vega was designed by a special task team with most sophisticated techniques, using computers in designing the outer skin of the car and making the tapes that form the dies. Computers were also used to match up parts, measure the stack tolerances, measure safety performance under head-on collision, and make all necessary corrections before the first 1971 model car was ever built. The 2300-cubic-centimeter all-aluminum, 4-cylinder engine, was designed to give gas economy comparable to the foreign imports.

The Vega was also designed with the plant and the people in mind. As the GM's newest plant, the Vega assembly plant was known as the "super plant" with the most modern and sophisticated designs to maximize efficiency. It featured the newest engineering techniques and a variety of new power tools and automatic devices to eliminate much of the heavy lifting and physical labor. The line gave the workers an easier access to the car body, reducing the amount of bending and crawling in and out, as in other plants around the country. The unitized body in large components like pre-fab housing made the assembly easier and lighter with greater body integrity. Most difficult and tedious tasks were eliminated or simplified, on-line variations of the job were minimized, and the most modern tooling and mechanization was used to the highest possible degree of reliability.

It was also the fastest moving assembly line in the industry. The average time per assembly job was 36 seconds with a maximum of 100 cars rolling off the assembly line per hour for a daily production of 1,600 cars from two shift operations. The time cycle per job in other assembly plants averaged about 55 seconds. Although the high speed of the line did not necessarily imply greater work load or job requirement, it was a part of the GM's attempt to maximize economy in Vega assembly. The fact that the Vega was designed to have 43% fewer parts than a full-size car also helped the high-speed line and economy.

Impact of GMAD and Reorganization in the Lordstown Plant

As stated previously, the assembly operations at Lordstown had originally been run by Fisher Body and Chevrolet as two plants. There were two

organizations, two plant managers, two unions, and two service organizations. The consolidation of the two organizations into a single operating system under the GMAD in October 1971 required a difficult task of reorganization and dealing with the consequences of manpower reduction such as work slowdown, worker discipline, grievances, etc.

As duplicating units such as production, maintenance, inspection, and personnel were consolidated, there was a problem of selecting the personnel to manage the new organization. There were chief inspectors, personnel directors and production superintendents as well as production and service workers to be displaced or reassigned. Unions which had been representing their respective plants also had to go through reorganization. Union elections were held to merge the separate union committees at Fisher Body and Chevrolet in a single union bargaining committee. This eliminated one full local union shop committee.

At the same time, GMAD launched an effort to improve production efficiency more in line with that in other assembly plants. It included increasing job efficiency through reorganization and better coordination between the body and chassis assembly, and improving controls over product quality and worker absenteeism. This effort coincided with the plant's early operational stage at the time which required adjustments in line balance and work methods. Like other assembly plants, the Vega assembly plant was going through an initial period of diseconomy caused by sub-optimal operations, imbalance in the assembly line, and somewhat redundant work force. According to management, line adjustment and work changes were a normal process in accelerating the assembly operation to the peak performance the plant had been designed for after the initial break-in and start-up period.

As for job efficiency, the GMAD initiated changes in those work sequences and work methods which were not well coordinated under the divided managements of body and chassis assembly. For example, previous to the GMAD, Fisher Body had been delivering the car body complete with interior trim to the final assembly lines, where oftentimes the workers soiled the front seats as they did further assembly operations. GMAD changed this practice so that the seats were installed as one of the last operations in building the car. Fisher Body also had been delivering the car body with complete panel instrument frame which made it extremely difficult for the assembly workers to reach behind the frame in installing the instrument panels. The GMAD improved the job method so that the box containing the entire instrument panels was installed on the assembly line. Such improvements in job sequences and job methods resulted in savings in time and the number of workers required. Consequently, there were some jobs where the assembly time was cut down and/or the number of workers was reduced.

GMAD also put more strict control over worker absenteeism and the causes for defect work; the reduction in absenteeism was expected to require less relief men, and the improvement in quality and less repair work were to require less repairmen. In implementing these changes, the GMAD instituted a strong policy of dealing with worker slowdowns via strict disciplinary measures including dismissal. It was rumored that the inspectors and foremen passing defective cars would be fired on the spot.

Many workers were laid off as a result of the reorganization and job changes. The union was claiming that as many as 700 workers were laid off. Management, on the other hand, put the layoff figure at 375 to which

the union later conceded.⁴ Although management claimed that the changes in job sequence and method in some assembly work did not bring a substantial change in the overall speed or pace of the assembly line, the workers perceived the job change as "tightening" the assembly line. The union charged that the GMAD brought a return of an old-fashioned line speedup and a "sweatshop style" of management reminiscent of the 1930's, making the men do more work at the same pay. The workers were blaming the "tightened" assembly line for the drastic increase in quality defects. As one worker commented, "That's the fastest line in the world. We have about 40 seconds to do our job. The company adds one more thing and it can kill us. We can't get the stuff done on time and a car goes by. The company then blames us for sabotage and shoddy work."

The number of worker grievances also increased drastically. Before GMAD took over, there were about 100 grievances in the plant. Since then, grievances increased to 5,000, 1,000 of which were related to the charge that too much work had been added to the job. The worker resentment was particularly great in "towveyor" assembly and seat sub-assembly areas. The "towveyor" is the area where engines and transmissions are assembled. Like seat sub-assembly there is a great concentration of workers working together in close proximity. Also, these jobs are typically for beginning assemblers who tend to make the work crew in these areas younger and better educated.

The workers in the plant were particularly resentful of the company's strict policy in implementing the changes. They stated that the tougher the company became, the more they would stiffen their resistance even though other jobs were scarce in the market. One worker said, "In some of the other plants where the GMAD did the same thing, the workers were older and they took this. But, I've got 25 years ahead of me in this plant." Another worker commented, "I saw a woman running to keep pace with the fast line. I'm not going to run for anybody. There ain't anyone in that plant that is going to tell me to run." One foreman said, "The problem with the workers here is not so much that they don't want to work, but that they just don't want to take orders. They don't believe in any kind of authority."

While the workers were resisting management orders, there were some indications that the first-line supervisors had not been adequately trained to perform satisfactory supervisory roles. The average supervisor at the time had less than 3 years of experience, and 20% of the supervisors had less than 1 year's experience. Typically, they were young, somewhat lacking in knowledge of the provisions of the union contract and other supervisory duties, and less than adequately trained to handle the workers in the threatening and hostile environment which was developing.

Another significant fact was that the strong reactions of the workers were not entirely from the organizational and job changes brought about by the GMAD alone. Management noted that there was a significant amount of worker reactions in the areas where the company hadn't changed anything at all. Management felt that the intense resentment was particularly due to the nature of the work force in Lordstown. The plant was not only made up of young people, but also the work force reflected the characteristics of

4. All of the workers who had been laid off were later reinstated as the plant needed additional workers to perform assembly jobs for optional features to Vega, i.e., vinyl top, etc., which were later introduced. In addition, some workers were put to work at the van-assembly plant.

"tough labor" in steel, coal and rubber industries in the surrounding communities. Many of the workers in fact came from families who made their living working in these industries. Management also noted that the worker resistance had been much greater in the Lordstown Plant than in other plants where similar changes had been made.

A good part of the young workers' resentment also seemed to be related to the unskilled and repetitive nature of the assembly work. One management official admitted that the company was facing a difficult task in getting workers to "take pride" in the product they were assembling. Many of them were benefiting from the company's tuition assistance plan which was supporting their college education in the evening. With this educated background, obviously assembly work was not fulfilling their high work expectations. Also, the job market was tight at the time, and they could neither find any meaningful jobs elsewhere nor, even if found, could they afford to give up the good money and fringe benefits they were earning on their assembly-line jobs. This made them frustrated, according to company officials.

Many industrial engineers were questioning whether the direction of management toward assembly line work could continue. As the jobs became easier, simpler, and repetitive, requiring less physical effort, there were less and less traces of skill and increased monotony. The worker unrest indicated that they not only wanted to go back to the work pace prior to the "speedup" (pre-October pace), but also wanted the company to do something about the boring and meaningless assembly work. One worker commented, "The company has got to do something to change the job so that a guy can take an interest in the job. A guy can't do the same thing 8 hours a day year after year. And it's got to be more than the company just saying to a guy, 'Okay, instead of 6 spots on the weld, you'll do 5 spots.'"

As the worker resentment mounted, the UAW Local 1112 decided in early January 1972 to consider possible authorization for a strike against the Lordstown Plant in a fight against the job changes. In the meantime, the union and management bargaining teams worked hard on worker grievances; they reduced the number of grievances from 5,000 to a few hundred; management even indicated that it would restore some of the

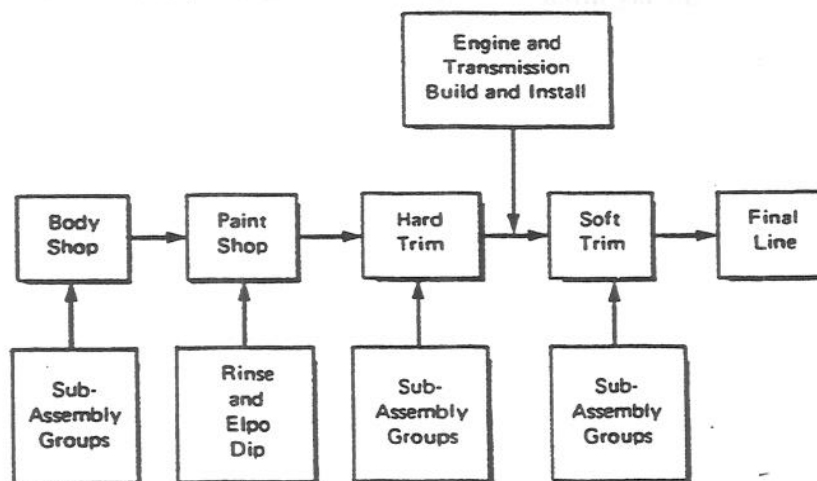


EXHIBIT 1. Flowchart of major assembly operations.

eliminated jobs. However, the bargaining failed to produce accord on the issues of seniority rights and shift preference, which were related to wider issues of job changes and layoff.

A vote was held in early February 1972. Nearly 90% of the workers came out to vote which was the heaviest turnout in the history of the Local. With 97% of the votes supporting, the workers went out on strike in early March.

In March 1972, with the strike in effect, the management of the Lordstown Plant was assessing the impact of the GMAD and the resultant strike in the Plant. It was estimated that the work disruption because of the worker resentment and slowdown had already cost the company 12,000 Vegas and 4,000 trucks amounting to \$45 million. There had been repeated closedowns of assembly lines since December 1971, because of the worker slowdowns and the cars passing down the line without all necessary operations performed on them. The car lot was full with 2,000 cars waiting for repair work.

There had also been an amazing number of complaints from Chevrolet dealers, 6,000 complaints in November alone, about the quality of the Vegas shipped to them. This was more than the combined complaints from the other assembly plants.

The strike in the Lordstown Plant was expected to affect other plants. The plants at Tonawanda, New York and Buffalo, New York were supplying parts for Vega. Despite the costly impact of the worker resistance and the strike, the management felt that the job changes and cost reductions were essential if the Vega were to return a profit to the company. The plant had to be operating at about 90% capacity to break even. Not only had the plant with highly automated features cost twice as much as estimated, but also the Vega itself ended up weighing 10% more than had been planned.

While the company had to do something to increase the production efficiency in the Lordstown Plant, the management was wondering whether it couldn't have planned and implemented the organizational and job changes differently in view of the costly disruption of the operations and the organizational stress the Plant had been experiencing.



The Internal Revenue Service: Automated Collection System

In early 1989, Tim Brown, assistant commissioner for Collection of the U.S. Internal Revenue Service (IRS), examined the report on his desk. The first full-scale automation of a major portion of his operation was encountering difficulties. "What has gone wrong?" he thought. "We've completely reorganized the operation, put millions of dollars into new technology, and in some ways it appears worse off than before." Turnover in the newly automated operation had reached a level unprecedented in its history; in some offices it had been reported to be as high as 100%. High turnover was of great concern because of shrinking labor pools and the general difficulty of attracting people to work for the federal government. The report cautioned also that the morale of employees and supervisors was suffering. Even the comments made by his senior managers were equivocal.

We need an understanding of how to manage an automated environment. I don't think we fully understand the effect of certain things on employees. . . . There are unique problems and concerns here. At various times, they have led to some distrust between management and employees.

It [computer monitoring] has value inasmuch as it keeps employees on their toes. The more they are monitored, the more they realize there's a cop around the bend.

Employees like to know how they're doing. The times that I see problems are when employees don't know what they're doing. The thing is how you use the [monitoring] information.

The bright side of the report was that productivity was higher than it had been before automation. Dollars collected had increased about 33% annually, inventory levels had declined considerably, and the total number of cases closed had improved 100%. And all of these improvements had been made with half the staff employed before automation. However, it was clear to Mr. Brown that productivity was not as high as it could be and would decline if the problems were not addressed. Two issues that required closer examination, in his view, were the way the work was organized and the manner in which computer-aided monitoring of employee performance was handled.

Professors John Chalykoff of the University of New Brunswick, St. John, Canada and Nitin Nohria of the Harvard Business School prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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The IRS Organization

Its Mission

The IRS's primary function was to collect revenue for the U.S. government. Its mission was:

To collect the proper amount of tax revenues at the least cost to the public, and in a manner that warrants the highest degree of public confidence in our integrity, efficiency and fairness.

In 1988, for instance, the IRS had received and processed more than 194 million tax returns, collected approximately \$935 billion, and dealt with 83 million taxpayer requests for information or assistance. It operated on a budget of \$5 billion in fiscal year 1988, with 120,000 employees in more than 700 offices in the United States and abroad.

Technology

Technology had always played a central role in the IRS operations. Mr. Brown commented:

It is not an understatement to say that every aspect of the IRS's mission has been and will continue to be affected by the technology revolution. For the IRS, it is impossible to look at even our recent past without seeing the enormous impact of information technology (IT). From the way tax returns are processed to the way employees communicate and use office equipment, IT has continually changed the way we do business. And, the IRS of the late 1980s is more dependent on—and benefits by—IT than ever before. There is no question that this trend will continue into the 1990s as the volume of work continues to grow.

IT assumed a central role in the IRS starting in the early 1960s when the agency integrated manual and computerized processing of tax returns into a basic processing system design that remained in place until 1989. Although the IRS had tried to constantly update the system with additions and new equipment, the system was limited by its design, which was based on 1950s' technology. This limitation, in Mr. Brown's view, meant that:

No matter how good our intentions were, or how well we trained our people to answer questions and help taxpayers, the system defeated us. We could not give taxpayers the kind of service we wanted and they deserved. . . . the kind of one-stop service they expected and usually got from the private financial sector. This failing was unacceptable to those of us charged with managing the Internal Revenue Service. Our only realistic solution was to undertake an unprecedented effort to modernize our entire information processing system—and I mean unprecedented in scope, not just in government, but in private industry as well. But, while we were committed to automation in order to provide the best service to taxpayers, we wanted to be very careful about the impact it would have on our employees. We were not willing to be like some of the private sector companies that are not very concerned about matters such as turnover, or just believe that one has to live with it. We have always strived to make the IRS a good place in which to work.

The report that Mr. Brown was reviewing dealt with one of the first and most important stages of this general effort at modernization: the automation of one segment of the IRS's Collection operations with a system called the Automated Collection System (ACS).

Collection

The IRS organization consisted of a central office in Washington, D.C., and 63 regional district offices, in which Collection was one of six divisions. (See **Exhibit 1** for an organization chart of a typical district.) Collection was responsible for handling cases in which the IRS had accounts receivable and which originated in one of 10 national Service Centers. Service Centers were where taxpayer returns were filed and processed and bills for unpaid taxes or notices for unfiled returns were issued. When these situations occurred, the Integrated Data Retrieval System (IDRS), a central information system that maintained data on all taxpayers and the status of their returns, generated a series of notices to the taxpayer. If after the fourth notice the case was not resolved, it was forwarded to Collection for further action.

Until 1983-1984, the Collection operation, called the Collection Office Function (COF), was organized as 63 district office sites. The IRS then decided to automate and reorganize the COF where a major problem was keeping ahead of the inventory of work. In Mr. Brown's words, "We got swamped with paper, mountains of it, and figured that we were not going to get out from under it without computerizing the operation." Introducing computer technology resulted in a reduction of collection sites from 63 district offices to 20 offices, or "call sites," each of which served multiple districts. It also resulted in a reduction of employees from 5,000 to 2,500. The cases handled by these call sites still originated in the same way as they did for COF. The new operation, intended to create a more efficient and effective Collection operation than its predecessor, the COF, was called the Automated Collection System (ACS). (See **Exhibit 2** for a list of the relationships among the Service Centers, ACS call sites, and Districts.)

Based on further conversations with Mr. Brown and other IRS personnel, brief sketches of the COF and ACS operations follow.

The Collection Office Function (COF)

Structure

COF was organized along six basic functions: 1) Process Review units, 2) Outgoing-Call units, 3) Office Field units, 4) Incoming-Call units, 5) a Walk-In unit and 6) Research unit. (**Exhibit 3** shows the layout of a typical COF office.) When cases arrived from the service center they went to the Process Review unit where they were categorized by individual and business accounts and batched in large open trays holding up to 500 of these paper documents. If there was no way to contact the taxpayers by phone, a letter was sent or a levy (a judicial order to seize or attach property) placed on any available source. These letters and levies generated the incoming calls and taxpayers, appearing in person at the Walk-In unit. Accounts for which a telephone number could be identified were sent to an Outgoing-Call unit.

The Outgoing-Call units primarily made outgoing-calls; when Incoming-Call units were overloaded they undertook some of their work. The Office Collection Representatives, as personnel in this function were known, worked at desks with trays of paper accounts, reviewing each one before

telephoning the taxpayer. Upon completion of the call, they would note on history sheets what had transpired during the exchange. This information, plus correspondence to and from the taxpayer added to the amount of paper handled in COF.

The Office Field unit, consisting of personnel known as Revenue representatives handled cases under a certain dollar amount that could not be closed in COF and that did not require more experienced personnel such as revenue officers. Revenue officers, the other major group of employees in the Collection field organization, handled high-dollar cases, those requiring visits to the taxpayer, and those that COF revenue representatives couldn't close. Revenue representatives, like the Office Collection representatives, made outgoing calls from the office. In addition, they went to taxpayers' residences to attempt to collect overdue taxes.

The Incoming-Call unit handled calls generated by the letters and levies. When a call came in to a Collection representative, he or she would try to get enough information from the taxpayer to become familiar with the case and to take it to the next step, which could be asking the taxpayer to come in or arranging to research the case and return the call later. It was difficult to close Incoming-Call cases. Representatives did not have the cases in front of them and it was extremely difficult to find them among the thousands of paper accounts in the office, many in some stage of transition.

The Walk-In unit staff dealt with taxpayers who appeared in person at the office. They could make adjustments to accounts or authorize installment agreements. They could also release levies pending satisfactory arrangements to pay the account.

The Research unit, whose personnel were known as TARS (Tax Account Representatives), handled the more difficult cases and special projects such as PRP (Problem Resolution Program) cases. Such cases involving disputes with the IRS over the amount owed, required immediate resolution.

COF was an operation inundated with paper; any action taken on accounts involved paper. Every time an employee worked on an account he or she had to write a summary sheet and attach it to the account. From the time an account was received to the time it was fully processed, anywhere from 10 to 15 separate pieces of paper would be added to it. An individual account could end up being more than an inch thick.

Compounding the paper problem was the rising inventory. According to an IRS report:

In 1976 we had 614,000 accounts receivable in our inventory. By 1982 this inventory had climbed to almost two million accounts. In dollar terms, accounts receivable grew from \$1.7 billion in July of 1976 to \$7.6 billion in December of 1982.

Consequently, according to this report, COF became "a cumbersome, outmoded, paper-laden system that could no longer handle the work load." Those who had worked in COF underscored that assessment. A former COF branch chief noted: "When a taxpayer wrote to us, we could associate the correspondence with the account only 20% of the time." Both managers and employees agreed that COF had come to a point where it was literally out of control and often characterized it as an operation where the better part of one's time was spent trying to locate lost cases. One employee related that her manager used to time, with his stopwatch, how long it took to find a case. It was often more than three hours. Another employee estimated that because at any time about 60% of the inventory was in transition, "most of us were always looking for something they couldn't find."

The COF system was not very efficient at following up on cases, either. Account representatives would tell taxpayers that they had ten days to pay; however, that was rarely pursued in a timely fashion. According to one manager:

It got to the point where the taxpayers knew the time frame was slow. So even though you told them that they had ten days to pay, they knew that there wouldn't be a timely follow-up, and that they had at least a couple of months.

There were other problems in the COF organization. Employees in the Incoming-Call units had difficulty handling the calls because they did not have easy access to the taxpayers' accounts. As noted above, accounts were continually in transition. To get the pertinent background information the Collection representative would have to ask the taxpayer, adding to the length of the calls, and casting doubt on the information's validity. Lack of easy access compounded the number of errors in the system.

Overall, the climate in the COF was described as very unstructured; the offices consisted of one big open area, with desks almost on top of one another. It was a very hectic environment, referred to as a "boiler room" by some of the employees and a "zoo" by others. Part of the chaos existed because COF employees often worked a case to completion, with a good amount of discussion back and forth among employees over correct procedures. Moreover, employees had considerable freedom to move throughout the office, usually searching for a case or consulting the IDRS terminal for information pertinent to it. In each function: research, contact, and investigation, they were well aware of what others' work consisted of.

Control Systems

At the level of office performance, COF supervisors would track trays of accounts by cycle. Each week was a cycle. They would meet weekly to discuss the status of the work and then shifted personnel to whatever area seemed to need help. Supervisors' activities, therefore, consisted primarily of planning, initiating, and following the progress of the work.

Individual performance appraisal was sporadic. To review work, COF supervisors would pull the accounts out of the trays and check that they were handled properly. For the most part the review process consisted of monitoring cases, not individuals, as it was often difficult to trace faulty work to a particular individual. Moreover, going through trays was done about "once every four months," according to one employee. Therefore, employee performance appraisals were only weakly associated with how they actually performed their work.

The Transition to ACS

Mr. Brown, who had begun his career with the IRS in the COF, noted that before the transition to ACS, the majority of the people working in COF had been there a long time. "It was as though they were there forever." These offices were staffed mostly with "older ladies" who knew their jobs well and helped each other in completing cases; they did not receive the proposal to shift to ACS with much enthusiasm.

A lot of the COF staff, particularly those who had the seniority to transfer elsewhere in the system, did not go to ACS. "We lost a lot of the technical knowledge they possessed with the changeover to the new system. We had to hire almost 50% of the people from outside the organiza-

tion and train them from scratch." In Mr. Brown's view, a lot of the senior people did not transfer to ACS because of stories that were circulating about what it would be like—tied to the computer terminal all day.

The Automated Collection System (ACS)

Technology

The Automated Collection System (ACS) was a computerized inventory control system consisting of three computer components: IDRS (Integrated Data Retrieval System), IBM, and Rockwell ACD (Automated Call Distributor).

IDRS was a master computer located in the Service Centers and linked to the ACS call sites. Taxpayer information was keyed into this computer at the Service Center and fed to ACS call sites if, after a fourth notice to the taxpayer, a return had not been filed or taxes were still outstanding. The IDRS also furnished ACS sites with relevant updates regarding account data.

The IBM system consisted of a mainframe that contained the data-base of ACS accounts and controlled work processing, on a priority basis, to the several terminals staffed by account representatives.

ACD provided for the most cost-effective routing of outgoing telephone calls and allowed incoming calls to be routed to available employees. The Rockwell system automatically connected all incoming and outgoing lines to employee terminals, allowing for a large volume of calls to be handled simultaneously. Outgoing and incoming calls represented the heart of the ACS operation. The overall system also incorporated skip-tracing techniques, third-party contacts, and automated sources for locating taxpayers and their assets.

Cases could be accessed in the ACS by inputting a specific Taxpayer Identification Number or by pressing the <next case> key, which automatically displayed the case with the highest priority in the system. There was a three-tiered priority system in which, in general, workload in the highest tier had to be completed before that in a lower tier. In descending order of priority the three tiers were: 1) time-constrained cases, 2) assigned-employee cases, 3) scheduled follow-up-date cases.

Time-constrained cases were accessed when a best time to call the taxpayer had been identified. Assigned-employee cases were seldom used since account representatives regularly reassigned their cases for others to follow up. Scheduled follow-up-date cases, which constituted the majority of cases in the ACS system, followed essentially a first-in, first-out method that ensured that all cases were worked on. They were worked on according to oldest follow-up date first and then highest dollar value. Thus in general, a large-dollar case with today's follow-up date would not be accessed until all of yesterday's low-dollar cases were completed.

Structure

Each ACS call site was organized along three basic functions: (1) Contact, (2) Investigation, and (3) Research. (**Exhibit 4** presents the office layout of a typical call site.) After the respective Service Center sent out its notices, case information was fed directly into an IDRS terminal located

in the call site. It was then stored in the IBM system and could be accessed from employees' terminals.

Contact Function The Contact representative sat at a computer terminal and pressed a key for the next case; then the case with the highest priority in the system flashed onto the screen. After reviewing the salient information, he or she pressed the dial key, and the computer automatically dialed the taxpayer's telephone number. If there was no answer or the line was busy, the computer automatically rescheduled the case for another time. If the Contact representative reached the taxpayer, he or she then attempted to resolve the case. Whether successful or not at this point, the employee noted on the screen what action had to be taken as a result of the call. If a form or letter had to be sent out, the employee typed in a code and the document was computer-generated overnight at the appropriate Service Center.

Investigation Function The Investigation function paralleled the work of Process Review in COF. Investigation staff attempted to find telephone numbers for taxpayers when none were available on the ACS computer file. They scanned available phone directories, or called third parties to locate either taxpayers or their assets.

Research Function When the ACS sites were first established, the Research function handled the more difficult cases, plus incoming calls. Subsequently, in some of the call sites, incoming calls were handled by a Contact unit. The Research function could access both the IDRS and ACS terminals, with IDRS information used to supplement ACS information when complex adjustments had to be made to resolve a case. The Research function also handled correspondence.

Thus, in changing to ACS, the structure became more simplified; of the six functions that existed in COF, only three were kept in ACS. In part, this new, simplified structure was instituted because of the assumption that ACS would be able to close a lot more cases, as well as higher dollar cases, than was possible in COF. Those cases that ACS could not close would go directly to revenue officers who were now positioned in the district field office. The walk-in function was also kept separate from ACS. Thus, ACS became a back-room operation, without face-to-face contact with the taxpayer.

This new structure also resulted in an operation isolated from the rest of Collection, one not as well integrated. ACS no longer had personnel directly linked with their Collection colleagues in the field operation. Concerning the sense of isolation, one senior manager in ACS commented: "The rest of Collection thinks we're a dialing-for-dollars operation."

ACS offices were generally bright and roomy. All employees had their own terminals located in private cubicles. On the whole, they were discouraged from discussing case procedures with one another because supervisors felt that it wasted other employees' time. Moreover, because procedures were constantly changing, it was safest to consult with the supervisor.

As cases appeared on the employee's screen randomly (having been assigned to appear on that day), an employee—seeing only pieces of a case—rarely followed them through to completion.

Also, in ACS there was no reason to move from one's station to check the IDRS terminal because it was connected to the employee's terminal. Consequently, employees generally spent their entire working day at their terminal, within their particular function. It was more difficult for them to learn the work of other functions or to get to know other employees.

Thus, in introducing the technology there was a reintegration of three specialized functions, but one that made them—and the employees working in them—more isolated and less likely to follow individual cases through to completion.

From a performance standpoint, ACS addressed many of COF's problems. Because all accounts were on the computer, there was rarely a lost case. Moreover, correspondence could be easily matched to the appropriate case stored in the computer, eliminating time lost looking for cases.

The response time in ACS was much faster than in COF. When a time limit was placed on an account, an account representative entered a code and that case came up on the indicated day for further action.

Because an employee could quickly call up the history sheet of a particular account, follow-up on cases was also improved in ACS.

The three factors noted above: the ability to find cases, follow up on cases, and control incoming calls, were central to the improvements in work process and productivity of operations that resulted from the changeover to ACS.

Control Systems

Perhaps the biggest difference between COF and ACS was the amount of performance monitoring done in ACS. It was driven in part by the new technology's capabilities, and in part by management's insistence that reviews be done to monitor the benefits of the new automated system and its effect on employee performance.

In terms of office performance, the computer provided timely information that helped managers track the work status. A systems analyst, whose position was created for this purpose, continually monitored the amount of incoming and outgoing calls and, depending on the priorities of the site personnel, could "computer gate," or schedule, them accordingly. Consequently, there was less manual scheduling and virtually no tracking of work flow in ACS.

The ACS technology allowed for additional real-time information on a variety of performance indicators. For the entire office, the computer monitored the number of calls received, the number of calls answered, the average speed of answer, the number of calls attempted, the number of calls completed, the average worktime of calls, the number of accounts closed, and the number of dollars collected. However, it was only a portion of the information available. In addition, reports were generated that provided information on resource allocation within the call site, such as inventory levels by type of account (business or individual, not filed, or taxes outstanding); the type of closure on accounts (full payments, installment agreements, or transfers to another part of the IRS); and a breakdown of over-aged accounts in inventory.

At the individual level, there were three distinct sources of performance monitoring information: (1) computer monitoring, (2) telephone monitoring, and (3) teach reviews.

Computer Monitoring Machine monitoring was the most pervasive source of information on work behavior and productivity. The computer provided supervisors and managers with information concerning an employee's average talk time, the number of calls attempted, number of calls completed, time spent away from the computer, and time between calls. This information was

sometimes relayed to the employee, especially when one or more of the indicators were judged to be below target. However, the use of machine statistics for formal performance appraisal was not allowed according to the union contract.

Telephone Monitoring As outlined in the *ACS Management Handbook*, supervisors were required to monitor at least two completed calls to taxpayers, or a minimum of one hour per employee, per week. In this activity, the supervisor listened to the conversation and rated the employee on key criteria such as correct procedure, courtesy, and ability to control the conversation. While monitoring the telephone conversation in process the supervisor simultaneously viewed a screen display of the account the employee was working. According to IRS monitoring guidelines:

Telephones subject to monitoring must be clearly marked so that telephone users will have full knowledge of the monitoring possibilities.

All employees must be notified, in writing, that their work-related calls are subject to monitoring. This should be accomplished semi-annually. In addition, new employees must be given the same notification prior to assuming monitored telephone duties.

The results of this review were supposed to be given to the employee immediately on completion of the call. Used in the formal performance appraisal process, these reviews had direct implications for promotions and other valued outcomes. Referring to the monitoring reviews, one employee stated: "It's a numbers game; if you don't have the numbers, you're not going to move up."

Teach Reviews Teach reviews of employees' work, generally done on a weekly basis, consisted of the supervisor using a computer terminal or hard copy to display all cases worked by an employee over a period of time. According to the "handbook," the supervisor had to determine whether the employee was:

1. analyzing ACS data correctly
2. making correct decisions and recommendations
3. initiating effective follow-up actions;
4. following procedural guidelines; and
5. encouraging call-backs or correspondence unnecessarily.

The results of the review were either communicated to the employee face-to-face or left in his or her drop-box. Regardless of the method of feedback, the results were used in the formal quarterly and annual employee performance appraisal sessions and could have a direct bearing on such outcomes as promotions.

Thus, one of the distinctive features of ACS call sites was the amount of reviews that supervisors and managers were responsible for. Moreover, the technology's capability to monitor both systemwide and individual-level performance made ACS's work operation radically different from COF's. The impact of the transition to ACS on supervisors' and employees' jobs can be summarized as follows. Supervisory work became more singularly focused on the monitoring of employees' work, requiring significant amounts of time. As a consequence, employees were monitored much more heavily than in the past. Moreover, they were much more restricted in their movements; their job consisting primarily of interacting with a computer terminal.

Supervisors' and Employees' Reactions to the Change

Supervisors

The technology in ACS helped to rationalize supervisors' jobs; their work became much less fragmented. However, it had serious implications for how they viewed themselves and the amount of discretion they felt they had.

Most supervisors interviewed stated that on the whole they preferred ACS to COF. However, this view was not without qualification. Some referred to themselves as "glorified watch dogs." One stated:

I've never been in an environment where employees and supervisors are so scrutinized. Everyone observes everyone else. There's no getting around it.

Supervisory discretion was an issue throughout the call sites. For example, statements similar to "they [senior managers] treat us like babies"; "we have the capability to control but we are not allowed to use it"; or "managers are so concerned with employees' perceptions"; and "we're judged on employees' perceptions of our communications skills," were not uncommon.

There was often a strong feeling of control: of both controlling and being controlled. Some of the supervisors felt that the requirements for telephone monitoring dictated that they give feedback. They saw it being ineffective as it was made routine, rather than spontaneous.

However, other supervisors felt differently. They viewed the control potential of the technology as a positive aid to accomplishing their tasks, noting that it was "far easier to identify weak and strong employees." Expressing what she felt was the majority view, one supervisor stated: "Supervisors like it better because they are now able to control the work environment—reward good people, sit on bad people."

Supervisors' activities centered on reviews. When asked to relate their most important activities in a typical week, supervisors nearly unanimously mentioned employees' reviews, particularly telephone monitoring. Representative statements were:

Telephone monitoring is number one. It probably eats up 60% of my time.

Telephone monitoring! You finish on Friday and you start again on Monday.

In general, a significant amount of supervisors' time was involved in doing one review or another. The following statement by a supervisor may not be typical of the actual time that most supervisors put into reviews, but it is suggestive of the amount of time necessary to meet review requirements:

Telephone monitoring takes up 15 hours a week minimum. On average, it takes about 20 hours. Counselling employees and presenting feedback on reviews takes another 4-5 hours. Teach reviews, where I review every fifth case on each employee, takes 6-8 hours a week.

Thus, anywhere from 25 to 33 hours of a supervisor's week could be spent on reviews.

Some supervisors noted monitoring's potential for developing employees, viewing it as "a great way to give employees instant feedback on their progress." This attribute was often mentioned. However, the reality was seen as far different in many cases, due to the tension between meeting the monitoring requirement and realizing the feedback potential.

One supervisor stated:

Supervisors may not use it as the really good tool that it is. It's a positive thing. We resent it because it takes so much time. Supervisors may not want to do it so it turns out to be negative.

Others were clearly disenchanted with what they came to perceive as an exercise lacking value, on the whole more dysfunctional than functional:

For an employee the feedback after a while becomes the same thing. It has little effect.

I don't see that much difference, whether I monitor or not. Things that I would identify as important don't seem that significant.

Since I have to do the monitoring, I say something, one way or the other.

Monitoring just ends up being negative management.

Employees

We're pretty much tied to the place. All our time is monitored daily. There aren't the friendly hellos or chit-chat "did you just get back from your vacation?" and stuff like that. It doesn't bother me. Management is aware of it and has little get-togethers.

— ACS employee

The above quote points to the isolation of employees that can accompany computerization in office settings. Whereas in the above statement, the employee was not particularly bothered by the lack of interaction with other employees (indeed, she later stated that she rather appreciated the isolation as it "allows me to do my work"), others were less than enthusiastic. Typical statements were:

In my supervisor's eyes, if I'm not at the terminal I'm not working.

It's too confining required to be on the terminal all day.

In the 25 years I've been here (in the IRS) I've never been tied down (as in ACS).

The feeling of confinement resulting from a required constant presence at their terminals was mentioned by employees as the single factor they most disliked in the transition to ACS. Also

important was that they no longer worked a case through to completion, which lessened job satisfaction. They noted that their performance was reviewed more, but that had not in itself been a problem. Most employees thought the monitoring was all right if it was conducted properly.

Indeed, the majority of employees interviewed concurred with management's assessment of the general need for monitoring and some of its positive impacts:

We have to do monitoring. I'm sure we don't like to have it done to us all the time, but it's necessary for quality control and as a check on new procedures. It increases performance. I know when I get comments that say you forgot to do something, I try to do it the next time.

Monitoring reminds you not to get careless and to keep up with new procedures. . . . I think that when you're first learning, it would be good if all your calls were monitored.

You get good feedback from monitoring. Most of mine was positive.

If we weren't monitored, you'd get all kinds of things going on.

However, another more negative side to monitoring was also raised by some employees:

Some employees think it's like being spied on.

You can get a biased manager who is looking for the bad rather than the good in someone.

I think that monitoring can be good if it's objective. But if they (supervisors) interject with their opinions, then it's not so good. There are different ways of handling calls. Both answers may be right in terms of working a case.

They [supervisors] give the feedback too late. By then you can't remember what happened in the call.

On the whole, employees stressed that how computer-aided monitoring was approached made all the difference. Some even suggested that supervisors "should do more telephone monitoring, but it should be used strictly as a quality control tool." They often felt that instead that it was frequently used as a "gotcha!"

Conclusion

Sifting through these reactions, Mr. Brown wondered what to do next. The Collection division was committed to making the technology initiative work and to learn from this experience in order to automate other operations. The enhancements in productivity and service that the IRS was able to provide with the introduction of ACS was impressive. Yet, the reactions of the managers and employees who had to make the system work suggested that there was still considerable room for improvement. There were at least three options that Mr. Brown felt worth considering seriously.

The first option was to restructure ACS's work organization into semi-autonomous teams. Such teams would comprise members who, among them, had all the functional expertise necessary to handle cases to completion. They would then be given a batch of cases to work on and their performance would be monitored only as to how they handled the cases. Scheduling work flow and monitoring individual performance would be the team's responsibility. Mr. Brown's technical people had pointed out that this option would require an investment of more than \$1 million to redesign the technology so that the teams could handle cases from start to finish. The teams would also have to change to a uniform pay scale instead of the three that then existed for Contact, Research, and Investigation. Such a change was certain to raise the wage bill.

The second option was to retrain ACS employees to become more versatile and able to handle all aspects of the collection function. For example, employees would handle cases as best they could from start to finish. This option, like the one above, would necessitate raising the pay scale to compensate employees for the additional skills required to handle all of the functions in closing a case. In addition, there would be significant retraining costs.

The final option was to work within the present organization but to change the way the system was managed. The report that Mr. Brown was reviewing suggested that seven factors were significant in influencing employees' reaction to ACS. They were: (1) the immediacy of monitoring information feedback, (2) the nature (positive or negative) of the feedback, (3) the clarity of the criteria used to rate performance, (4) the method of monitoring (whether done remotely or with the supervisor sitting next to the employee), (5) the supervisor's knowledge of the job, (6) the supervisor's leadership style, and (7) the employees' prior disposition toward computer monitoring. Taken together, these factors pointed to the importance of effectively managing the way in which the monitoring process was used and the information generated from it communicated to the employees. Experience had shown that the way management approached monitoring did make a difference to its effectiveness and employees' reactions to it.

Exhibit 1 Organization Chart of a Typical IRS District

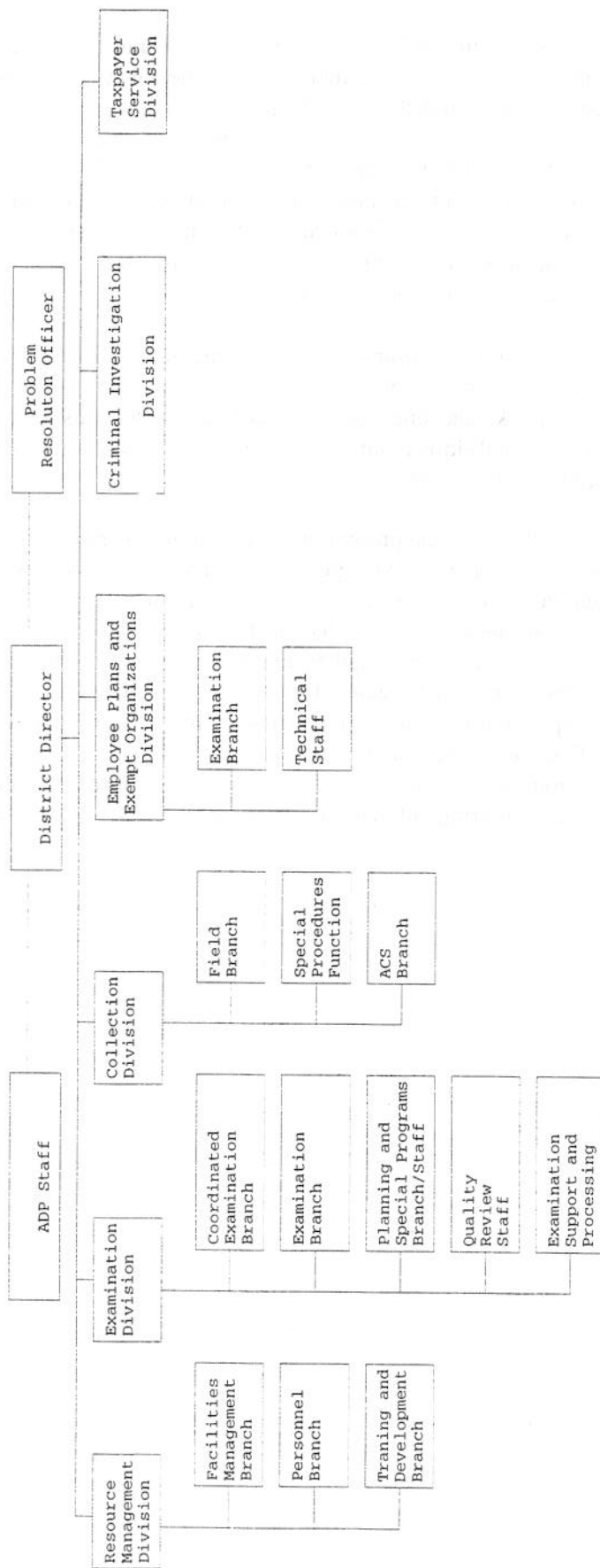


Exhibit 2 Listing of ACS Sites by Service Center and District

Service Center	Call Site	District Served	Service Center	Call Site	District Served
Andover	Boston	Augusta	Fresno	San Francisco	Honolulu
		Boston			Los Angeles
		Burlington			San Francisco
		Harvard	Ogden	Seattle	Laguna Niguel
		Portsmouth			San Jose
		Providence			Los Angeles
Brookhaven	Buffalo	Albany	Denver		Anchorage
		St. Paul			Sacramento
		Buffalo			Portland
Philadelphia	Manhattan	Brooklyn			Seattle
		Manhattan			Aberdeen
		Newark			Cheyenne
	Newark	Baltimore			Denver
		Philadelphia			Fargo
		Pittsburgh			Omaha
	Philadelphia	Wilmington			Phoenix
		Foreign Operations (Puerto Rico)			Reno
		Atlanta			Salt Lake City
Atlanta	Atlanta	Birmingham	Cincinnati	Cleveland	Boise
		Columbia			Helena
		Jackson			Cleveland
	Jacksonville	Jacksonville	Kansas City	Chicago	Parkersburg
		Greensboro			Cincinnati
		Nashville			Detroit
Memphis	Nashville	Little Rock		St. Louis	Louisville
		Indianapolis			Chicago
		Richmond			Des Moines
			Austin	Dallas	Milwaukee
					St. Louis
					Springfield
				Houston	Albuquerque
					Dallas
					Oklahoma City
					Wichita
					Austin
					Houston
					New Orleans

Exhibit 3 Office Layout of a Typical COF Cite

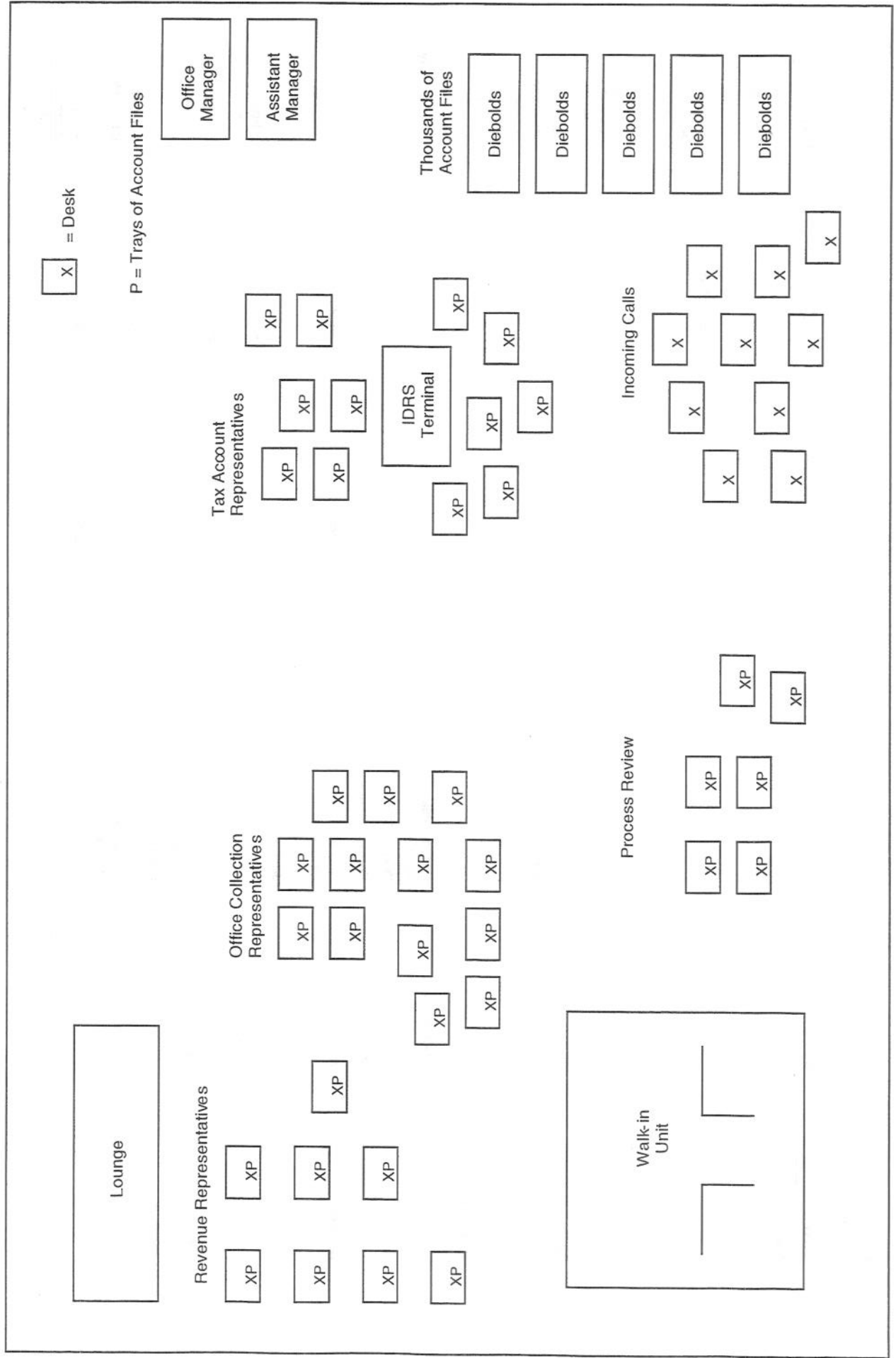
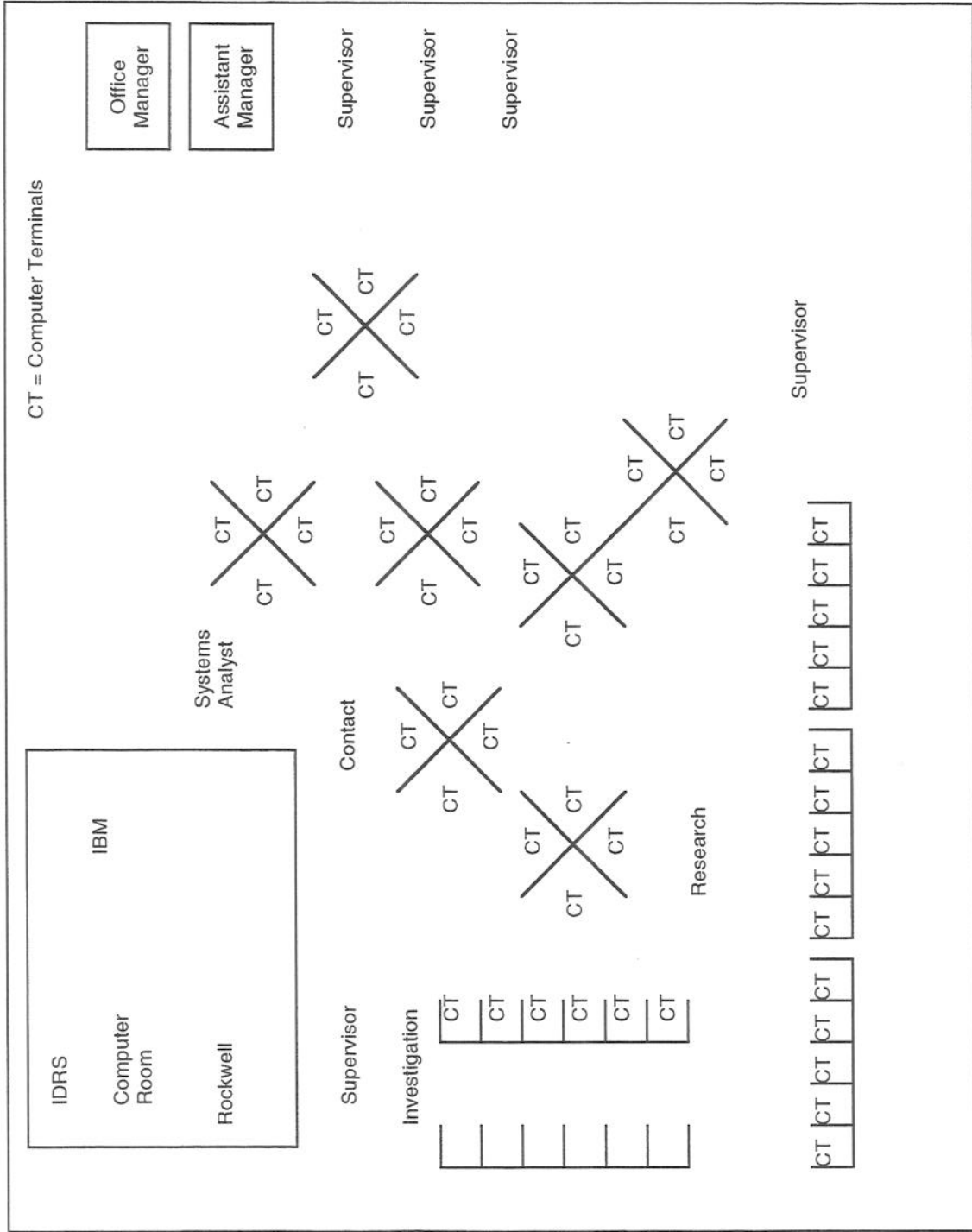


Exhibit 4 Office Layout of a Typical ACS Site



HBR

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How Networks Reshape Organizations—For Results

Ram Charan

In a world of increasing global competition and unrelenting change, many companies have been strong on crafting vision and strategy and weak on delivering results. As they struggle to improve their capacity to execute, senior managers use words like trust, teamwork, and boundaryless cooperation to describe the organizations they aspire to build.

Recently a new term—networks—has entered the vocabulary of corporate renewal. Yet there remains much confusion over just what networks are and how they operate. In some companies, networks imply a set of external relationships—a global web of alliances and joint ventures. In others, networks mean informal ties among managers—floating teams that work across functions and maneuver through bureaucracy. Still other companies define networks as new ways for executives to share information, using management information systems, video conferencing, and other such tools.

I have spent four years observing and participating in the creation of networks in ten companies based

in North America and Europe. (See the insert "A Note on Research.") These companies are clear about why they are creating networks, what networks are, and how they operate. To them, networks are designed to build the central competitive advantage of the 1990s—superior execution in a volatile environment. No traditional corporate structure, regardless of how decluttered or delayed, can muster the speed, flexibility, and focus that success today demands. Networks are faster, smarter, and more flexible than reorganizations or downsizings—dislocating steps that cause confusion, sap emotional energy, and seldom produce sustainable results.

A network reshapes how and by whom essential business decisions get made. It integrates decisions horizontally at the lowest managerial levels and with superior speed. In effect, a network identifies the "small company inside the large company" and empowers it to make the four-dimensional trade-offs—among functions, business units, geography, and global customers—that determine success in the marketplace. It enables the right people in the organization to converge faster and in a more focused way than the competition on operating priorities determined by the imperatives of meeting customer needs and building concrete advantage.

A network is a recognized group of managers assembled by the CEO and the senior executive team. The number of managers involved almost never exceeds 100 and can be fewer than 25—even in global

Ram Charan is a Dallas-based management consultant who advises companies in North America, Europe, and Asia on implementing global strategies. In previous issues of HBR, he and Noel Tichy interviewed General Electric chairman, John Welch ("Speed, Simplicity, Self-Confidence," September-October 1989) and Citicorp chairman, John Reed ("Citicorp Faces the World," November-December 1990).

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A Note on Research

For the last four years, I have observed and participated in the creation of networks in ten companies based in North America and Europe: Armstrong World Industries, Blue Cross/Blue Shield of Georgia, CIGNA, Conrail, Consolidated Natural Gas, Dun & Bradstreet, Du Pont, General Electric (certain business units), MasterCard International, and Royal Bank of Canada.

Unlike most academic research, my research has been conducted *as events took place*. I worked with management to improve group-processing techniques, to design feedback surveys to measure progress, and to encourage

openness and candor in all discussions. By participating in critical meetings and remaining in close touch with the participants, I was able to observe developments "on-line" and test reactions with all participants. This on-line dimension is important. After-the-fact surveys and interviews, the traditional academic research tools, seldom provide the range of perspectives required to understand individual and group behavior in large organizations. As with networks themselves, research benefits from the power of specificity.

companies with tens of thousands of employees. The members are drawn from across the company's functions, business units, and geography, and from different levels of the hierarchy. Membership criteria are simple but subtle: What select group of managers, by virtue of their business skills and judgment, personal motivations and drive, control of resources, and positions at the juncture of critical information flows are uniquely qualified to shape and deliver on the corporate strategy? Managers who pass these tests become the core network, hold regular meetings, form subnetworks for critical operating tasks, and use conference calls, electronic mail, and computerized information systems to share information.

Networks really begin to matter when they affect patterns of relationships and change behavior—change driven by the frequency, intensity, and honesty of the dialogue among managers on specific priorities. Networks are designed to empower managers to talk openly, candidly, and emotionally without fear, to enrich the quality of their decisions, to test each other's motives and build trust, and to encourage them to evaluate problems from the perspective of what is right for the customer and the company rather than from narrow functional or departmental interests.

Consider three snapshots of emerging networks:

□ At Conrail, the freight transportation company based in Philadelphia, 19 middle managers drive the company's key operating decisions. The network, called the operating committee, meets for up to two hours on Monday mornings to review and make decisions on a wide range of tactical issues—searching for the right mix of price, delivery schedule, and consistency of service that meets the needs of important customers at low cost and that generates competitive returns in a capital-intensive business.

The operating committee is also developing a five-year business plan—a first-of-its-kind analysis meant to generate radical new approaches to important segments of the business. Senior executives join in the dialogues of the operating committee and receive briefings on the evolving substance of the strategic plan, but they neither chair the sessions nor dominate the deliberations.

□ In Montreal, Royal Bank of Canada, one of the largest and most profitable banks in North America, has embraced management reforms that promise to accelerate and sharpen implementation of its retail strategy. The reforms grew out of a six-month study by a network of 12 managers. They conducted a candid and exhaustive review of the most important operational and human resource issues facing the retail bank. The members, called the community banking team, were not senior executives; rather, they were field officers from across Canada—middle managers with titles such as vice president for retail banking in Alberta and area manager for North Winnipeg. They presented the results of their study, including 17 concrete proposals for change, to a major conference of bank executives and other senior officers in May 1990. Since then, senior management has worked with the group's leadership to implement the plan. One goal is to turn all of the bank's area managers into a network—a close-knit group that routinely shares best practices, learns from each other's problems, and works together to understand the business more deeply.

□ At the United Kingdom headquarters of Dun & Bradstreet Europe, a "development network" evaluates and monitors new business-information products and the customization of existing products. For years, D&B Europe has faced the tensions that afflict so many cross-border and cross-cultural organizations. Its computer databases, technical staff, and

marketing group are centralized in the U.K.—a sensible structure given D&B's position as the only pan-European competitor in its business. But centralization has made it harder and more time-consuming to tailor Europewide products to the needs of local customers and to set priorities among competing projects in different countries.

The development network is designed to make these trade-offs more quickly and more skillfully. It is neither a new layer of bureaucracy nor a means to wrest power from the functional organizations. Rather, a core of 12 or so key players meet weekly to monitor the performance of the development process, identify barriers, and devise ways to remove them. One of the network's first steps was to create an investment-management function responsible for specifying which projects get done, in what order, and how quickly—in ways that meet the needs of customers and countries but that also reflect corporate goals and strategies. The network reports to the field through a designated representative in each of the 13 country organizations, thus increasing the speed of communication and reducing confusion. Some members act as business project managers, with complete cross-functional responsibility for the success of major projects.

These three companies, along with the others I have observed, share a common understanding of the urgency and volatility of their competitive environment and the need to break with decision making based purely on hierarchical and functional authority. They are also clear about how networks differ from teams, cross-functional task forces, or other ad hoc innovations designed to break hierarchy. First, networks are not temporary. Most task forces assemble to solve a specific problem and then disband and return to business as usual. They do not sustain change in the behavior of the organization. Members of a network, on the other hand, identify with it and with each other. The frequency and honesty of their dialogues reshape personal relationships. Continuous practice over a sustained period of time builds a shared understanding of the business. Networks even affect how their members move through the company. Managers' performance and promotability is evaluated with respect to their contribution to the network and sometimes by the network itself.

Second, unlike most teams and task forces, networks do not merely solve problems that have been defined for them. Networks are dynamic; they take initiative. They become the vehicle to redirect the flows of information and decisions, the uses of power, and the sources of feedback within the hierarchy. They become a new way of doing business and a new operating mechanism for individual managers to make their presence felt.

Finally, networks make demands on senior management that teams and task forces do not. CEOs and their direct reports no longer define their jobs as making all substantive operating decisions on their own. Rather, their primary job is shaping the processes and personal relationships that allow other managers, the members of the network, to make decisions. To be sure, top managers still set goals and make all kinds of decisions—about personnel, resource levels, acquisitions and divestitures, upgrading technical competences. But they must also become more adept at diagnosing the behavior of their organization, building relationships among key managers, modifying measures and rewards, and linking all of these "soft" changes with the company's economic performance.

This article examines the process of building and sustaining networks in large organizations—a process that begins at the top. Senior managers work as change agents to create a new "social architecture" that becomes the basis of the network. Once the network is in place, they play at least three additional roles. First, they define with clarity and specificity the business outputs they expect of the network and the time frame in which they expect the network to deliver. Second, they guarantee the visibility and free flow of information to all members of the network and promote simultaneous communication (dialogue) among them. Finally, they develop new criteria and processes for performance evaluation and promotion that emphasize horizontal collaboration through networks. They openly share these performance measurements with all members of the network and adjust them in response to changing circumstances. Let us explore these areas one at a time.

Social Architecture and Change

The foundation of a network is its social architecture, which differs in important ways from structure. Organizational structure refers to the systems of vertical power and functional authority through which the routine work of the organization gets done. Social architecture refers to the operating mechanisms through which key managers make trade-offs and to the flow of information, power, and trust among these managers that shapes how those trade-offs get made. Social architecture does not concern itself merely with who is in the loop or the process by which the loop forms. Social architecture concerns *what happens* when the network comes together—the intensity, substance, output, and quality of inter-

actions—as well as the frequency and character of dialogue among members on a day-to-day basis.

A robust social architecture does not imply absolute harmony among peers. Indeed, the single most important role of networks is to surface and resolve conflict—to identify legitimate disagreements between functions, regions, and business units and to make difficult trade-offs quickly and skillfully. A robust social architecture encourages members of the network to become mature and constructive in their approach to conflict, to direct their energies toward the substance of disagreements rather than toward personal clashes and politics, to search for creative solutions rather than to look over each other's shoulders, and to identify new challenges.

Senior management drives the process of building a new social architecture. The first step is design. The CEO must identify the important decision makers in the organization, assemble them into a network, and communicate it throughout the company. This can be a sensitive step since the process of including some managers in a network necessarily means excluding others. And membership seldom relates directly to hierarchy or seniority. Indeed, the criteria are specific to each company, a function of the unique challenges facing the business and the strengths and weaknesses of the managers themselves. The basic objective, though, is to find the right mix of managers whose business skills, personal motivations, and functional expertise allow them to drive the enterprise.

At Conrail, for example, the core network comprises fewer than 50 managers drawn from three layers below the CEO. The operating committee is a subset of this core network. Explains James Hagen, Conrail's CEO: "There are no more than 25 people in this company whose close, horizontal collaboration will have a dramatic impact on the bottom line. There are the seven assistant vice presidents in the marketing department responsible for our lines of business—steel, autos, intermodal, and so on. There are the six general managers responsible for railroad operations in different parts of our service territory. There are some key people at headquarters—the chief mechanical officer and the chief engineer, the head of customer service—as well as the senior management group. On their own, none of these managers can move the business decisively. As a network, they are already making a visible difference."

As the social architecture begins to change, the performance of managers whose behavior hurts the network becomes visible. This raises a second crucial role for senior management—dealing with mismatches by reassigning the problem executives. Networks play to the best instincts of people. Most middle managers don't resist change. They want to

cooperate, share information, be open and secure in their interactions with peers. Networks quickly surface people of exceptional competence, informal leaders whose talents have been hidden behind functional or hierarchical walls. They also reveal managers whose business skills or personal style are mismatched with the needs of the network, people who simply can't make the change to a new way of doing business. These managers can have a toxic effect on the rest of the group. At nearly every company I have studied, at least one senior executive (but never more than two) has had to be reassigned or dismissed because of an inhibiting presence and unwillingness to change. With respect to social architecture, one bad apple *can* spoil the whole bunch, especially if that person is in a position of vertical power in the organization.

Third, and most important, building the social architecture requires an intense and sustained focus on the fundamentals of the business rather than abstract appeals to culture, teamwork, or values. Companies do not build networks so that managers will "like" one another or behave like "family." Networks are designed to develop professional trust and empathy and a richer and more widely shared understanding of the specifics of the business. No generic change program imported from the outside can generate such understanding. When network members identify real business problems, diagnose them together, create a broad and common base of specific information, and reach conclusions that reflect the pressures and capabilities of multiple functions and geographic units, they become more skillful at making trade-offs, and more trusting of one another. The keys are immersion, concentration, practice, and the simultaneity of information flows.

The rise of networking at Conrail illustrates the change process associated with building a new social architecture. The operating committee, which officially took shape in late 1990, is the railroad's core network for profitability—the central operating mechanism through which important business trade-offs get made. All told, though, 46 managers from around the company worked for two years to build the trust and confidence necessary to support a departure as radical as the operating committee. The goal was to create a new social architecture among these managers—a real challenge given Conrail's past.

Conrail is an unlikely candidate for management innovation. No industry compares with railroads for its legacy of rigid hierarchy and authoritarian management. And no major railroad compares with Conrail for its commitment to relentless and painful cost cutting and retrenchment. Since 1976, when Conrail was created from the remains of the bankrupt Penn

Central and several smaller lines, employment has fallen from roughly 100,000 workers to fewer than 28,000.

These are not ideal circumstances in which to build trust and professional empathy. James Hagen, who became CEO in May 1989, understood that he could not simply assemble a group of middle-level managers into a network and expect them to erase decades of learned behavior. The change process began with the selection of two core groups of managers. Conrail has 450 or so top-line managers, people whose decision-making authority directly or indirectly affects operating income. Top management selected fewer than 50 from this group to serve in the two networks. The senior planning team consisted of 13 executives, essentially the company's top officers, although it did deliberately include two lower level managers. The second network, the strategy managers group (SMG), consisted of about 35 executives from many functions and departments. This is where judgment became important. Top management developed a statement of its selection criteria for the SMG: "The smallest working group whose interlinking can significantly affect both the operation and selling of our basic services." In practice, the criteria meant that SMG membership was weighted toward field managers rather than corporate staff and toward field managers with direct responsibility for pricing service, meeting customer demands, or running the railroad. (Later, as the new social architecture began to evolve, some staff members shifted to line jobs.)

The creation of the network was followed by a series of initiatives designed to change the character of the dialogue and interactions among the members. Some of the techniques were simple, almost quaint. For example, the company published a directory of the SMG members complete with photographs and descriptions of career histories and personal interests. The directory reinforced the SMG as a living network rather than a one-time task force or team. It helped create an identity for a group that had never assembled together before. In fact, several members, despite their complementary roles in the company, had never even met one another.

More substantively, the two groups began a series of meetings, first separately, then together, to diagnose the future of Conrail. At all times, both groups focused tightly on the business itself—there was no wilderness experience, team building, or other generic exercises. For example, the SMG identified nine priority issues and created small teams (or subnetworks) to study them and report back with action-oriented recommendations. The projects included some of the most politically sensitive problems inside the railroad: work force reduction, billing quality, and managerial rewards and evaluation.

These teams became the building blocks of the new social architecture. Small groups of managers, most of whom had barely spoken to each other before the creation of the SMG, devoted hundreds of hours to analyzing real problems and convincing the senior planning team to endorse their recommendations. This investment of time (over and above each member's day-to-day responsibilities) and the total immersion that the subnetworks required created personal bonds of enormous strength.

What's more, the subnetworks embraced rather than avoided conflict—a critical test of the members' good faith and capacity to air differences openly. For example, one group studied customer service at Conrail, specifically, whether and how to consolidate the three separate departments and ten different locations responsible for resolving billing disputes, tracking freight, and otherwise interacting with customers. Customer service had been a sensitive issue for many years; past efforts to consolidate it had been squelched after painful and demoralizing turf battles.

The group faced those turf battles squarely. Each of the six members had a direct or indirect functional stake in customer service: the general manager for information systems, the assistant vice president for customer service, a regional general manager, the assistant vice president for labor relations, the corporate treasurer, and the general manager for stations. Needless to say, a recommendation to consolidate would require compromise among these previously warring factions. But there was more. A move to consolidate would also require two members of the group to eliminate their own jobs; their positions would become redundant. The fact that these two managers took that step and spent several months with unclear prospects about their futures was a powerful statement of the group's capacity to resolve conflict.

The subnetwork also reckoned with conflict vis-à-vis senior management. During the course of their analysis, the group learned that certain senior executives were working behind the scenes to oppose consolidation. At an interim presentation to the SMG, the team members decided to take a stand. They proposed that they dissolve rather than make recommendations destined to fail. The rest of the SMG insisted that the subnetwork stay together and make its presentation to the senior planning team. It did, and after much debate, top management agreed to make the change.

In November 1990, Conrail announced it would consolidate all customer service activities at a new facility near Pittsburgh. To the outside world, this was a reasonable and welcome step to improve service. To the SMG, it was a major victory and a sharp break with the past—the sort of development that

builds professional trust, unleashes energy, and, over time, changes behavior.

The Power of Specificity

As the Conrail experience demonstrates, networking represents a decisive break with the past. Although it plays to people's best instincts, it is a demanding journey that requires managers to unlearn attitudes and behaviors reinforced over decades. No amount of general debate over business strategy and vision can build the trust and confidence required for new behaviors to emerge. All too often, managers invest huge amounts of time and energy reaching agreement on vision without investing in the truly hard work—becoming aligned on the nitty-gritty trade-offs and time pressures required to deliver on the vision. Agreement without alignment seldom changes behavior. Instead, it generates frustration, cynicism, and complacency.

That's why senior executives must define with clarity and specificity the business outputs they expect of the network and the time frame (usually less than six months) in which they expect the network to deliver. Such precision forces managers to reckon with the day-to-day realities of the business. Meanwhile, the dialogue and debate required to shape the targets builds commitment and confidence. Specificity allows the members of the network to see that they are making real change and that the change is linked directly to the improved economic performance of the organization. The more visible and persuasive this evidence, the more intense the personal commitments of the members to expanding the initiatives of the network. Over time, making visible progress on economic-priority items generates emotional energy and builds commitment.

The remarkable effectiveness of the Royal Bank of Canada's community banking team is a case in point. In less than one year, a network of 12 managers, most of them middle managers drawn from the field, made a mark on some of the most sensitive management issues in the retail operation: performance measures, spans of control, training and development. How did it succeed? By producing concrete deliverables, developing techniques to measure the organization's support for their proposals, and setting specific dates for implementation. (See the insert "The Power of Specificity—Royal Bank of Canada.")

The Conrail operating committee is another example. After only six months, the network can point to concrete achievements. For example, the introduction of a computer-based simulation model is helping to redesign the company's huge intermodal (truck-to-

train) business. But all 19 members of the network are clear about their ultimate goal—to move the railroad's operating ratio to 80% from the 1990 level of more than 87%. This is not an arbitrary target. The ratio, which measures operating expenses as a percentage of revenues, is the company's central indicator of profitability. Conrail needs a ratio of 80% for earnings to exceed its cost of capital and thus for the railroad to remain self-sustaining as a financial enterprise.

Every member of the operating committee (and the broader group of 46) understands the logic behind this target and the urgency of hitting it. The group monitors the ratio as a way to track its progress, and senior management uses specially designed feedback instruments to monitor the network's confidence that it will achieve the target. The fact that the ratio has begun to move even under adverse economic circumstances (most recently the ratio was at 84%) has been an enormous source of emotional energy and confidence—evidence that the network has begun to shape the company's economic performance.

Richard Archer, president of Dun & Bradstreet Europe, has chosen to personalize the D&B network's commitment to clear performance targets. The company's development subnetwork is one of several that Archer has assembled to meet the new cross-border competition in Europe. The challenges facing D&B are similar to those facing all companies struggling to globalize their operations: How does the organization strike the right balance between the power of centralization and the responsiveness of decentralization? How do managers balance the demands of cross-border customers, who expect uniform service at the same price everywhere, with the demands of national customers in what remain very different markets? What makes D&B Europe noteworthy is the clarity with which Archer and the network are addressing these issues.

The network-building process began in January 1989 and, at the time, involved 45 continental managers. Through a series of meetings, this group refined the company's strategic direction and business priorities. Each session strove to develop greater clarity than the one before it, and by late that year, Archer was able to develop a mission statement for D&B Europe. In early 1990, at a three-day workshop, he shared the statement with 98 top managers across all countries and functions, and revised the statement based on their feedback. At the end of that session, he assembled three cross-border project teams (not unlike Conrail's SMG subnetworks) to attack the highest priority issues facing the organization. Finally, drawing on the project reports and the revised mission statement, Archer worked with ten senior managers to craft a document that communicates the tangible and measurable results the net-

The Power of Specificity—Royal Bank of Canada

In the spring of 1990, 350 Royal Bank managers gathered in Montreal for a first-of-its-kind (and size) leadership conference. There the community banking team, a 12-member group assembled by chairman Allan Taylor the previous November, unveiled its six-month study. The team's charter was ambitious: to evaluate how well the bank was executing a bold new retail strategy and to recommend without limitations new initiatives to drive execution.

The strategy had been in place for several years. Its main organizational thrust was to increase the authority and prominence of the bank's area managers, senior field officers responsible for the performance of groups of bank branches. Top management was genuinely committed to transforming how operating decisions were made. Indeed, the plan could have been a primer on translating the abstract rhetoric of "empowerment" into tangible management principles. It emphasized the importance of personalized leadership by area managers, local market intelligence, interactive planning driven by the field, and local autonomy to provide area managers with the flexibility they needed.

Precisely because the retail strategy was such a departure and the team's charter so ambitious, there was a risk that the final report would disappoint, especially since no business crisis was evident. Royal Bank is the largest bank in Canada and the third largest in North America. It is also one of the most profitable. Its 1990 net income was nearly \$1 billion, more than any U.S. commercial bank, and its return on assets and equity consistently rank it high among North America's leaders. Retail is at the heart of this outstanding performance; Royal Bank has more than 7.5 million customers, 1,600 branches and 3,100 cash machines.

But the report does not disappoint. It is the most candid analysis of Royal Bank's retail operations ever

developed. Within a year of its completion, the bank had implemented nearly all of the team's proposals. The work of 12 managers, most of them drawn from the field, it is reshaping some of the most sensitive management issues in the retail operation: performance measures, spans of control, training and development. Why? One reason stands out: by producing specific deliverables, setting precise dates for implementation, and developing ways to measure progress, the community banking team embraced the power of specificity and used it to advantage.

The team's written report ran less than 100 pages, and its presentation to the spring conference (along with group processing of the presentation) lasted three hours. Packed into this limited space and time was a penetrating analysis filled with evaluations of particular incidents, documents, and success stories. There were no abstract calls for greater empowerment, more resources, or a deeper commitment to customer service.

Each of the team's proposals (there were 17 in all) included numbers, targets, or specific language that left no room for ambiguity or misinterpretation. For example:

- Limit the number of branches under the control of an area manager to between 7 and 12.
- Create formal mechanisms (conferences, newsletters, computer systems) to allow area managers to share expertise and competitor intelligence more systematically.
- Guarantee 15 days of training per year for existing area managers and launch Area Manager University, an intensive series of courses and training modules. Provide resources so that all new area managers would be graduates of the university by the spring of 1991.

work is expected to produce. He insisted that the final document run no more than one page—a discipline that forced even greater clarity and precision—and then published it as his personal *goals* for 1991.

Again, the development subnetwork is a case in point. The network is clear about its goals: reduce lead times by 50%; eliminate 80% of the old system's "process loss"; respond to all development requests (usually modifying existing products) within ten days. The results have been equally clear. Overall lead times for new products have been reduced from one year to six months. The D&B technical center has cleared a backlog of 100 requests from the country organizations; a country manager who puts in a development request can now expect a response in

less than three weeks. In 1991, for the first time, D&B Europe agreed to a detailed schedule for the implementation of new products. To date, all important deadlines have been met.

To be sure, the process of settling on meaningful specificity in time-based goals and outcomes is tedious and emotionally demanding. Many managers, especially senior managers, find it intellectually unappealing—less exhilarating, say, than crafting a stirring vision statement or a bold corporate strategy. (As one CEO noted, "There is a fine line between vision and hallucination.") Specificity requires dialogue, repetition, negotiation, candor, practice. Over time, though, these are the investments that generate alignment on and commitment to the details of

□ Institute standard, minimum autonomies for all area managers, including the right to hire, transfer, and evaluate employees below a certain pay grade, and the right to freely substitute between certain expense categories within the overall budget constraints. Negotiate even greater autonomies with high-performing area managers. Of course, the very specificity of these recommendations meant they were likely to be controversial. So the community banking team, working with the top managers who designed the leadership conference, created special group-processing techniques for immediate feedback from the group of 350. For example, the group was divided into sets of ten, each set reflecting a mix of hierarchy, function, and geography. These sets debated the report and were invited to offer feedback.

Here too clarity played a role. The team did not merely ask for general reactions. Rather, personal computers allowed the 350 attendees to "vote" on a series of questions designed to measure their enthusiasm about, confidence in, and commitment to the proposals. The voting was confidential, but the results could be tabulated by function, geography, or hierarchical position. The community banking team (and the entire leadership conference) could see immediately whether managers in Western Canada reacted differently from those in Montreal or whether headquarters executives were more strongly in favor of a proposal than field managers.

This detailed feedback was a vital source of information for the community banking team. It also energized and built the commitment of the audience. Never before had such a large group of executives been privy to such candid, detailed analyses and proposals.

The final step was implementation. The day after the

leadership conference, the community banking team held an all-day session with Royal Bank's top 50 executives. This group of 50 had been meeting on a regular basis for several years, working to build their own horizontal collaboration and trust. By securing the collective commitment of these executives, the community banking team acquired powerful allies. Moreover, for each of the 17 proposals, at least two managers—one from the community banking group and one from the group of 50—accepted deadlines and personal responsibilities for implementation. Successful implementation also became part of the annual objectives by which the senior executives were evaluated.

The results have been encouraging. By the middle of 1991, all geographic areas had been broken down into units small enough that an area manager can visit every branch at least once a week. Area Manager University is up and running, and the first graduates have completed their course work. The retail bank has implemented standard "key result areas" so that all area managers know the criteria on which they will be measured. Nearly two-thirds of the area managers have negotiated extended autonomies with senior management, and negotiations continue with the remaining area managers.

The work of the community banking team is just a beginning. The ultimate goal is for area managers across Canada to function as a horizontal network: sharing expertise, transferring best practices, learning from mistakes. In fact, all 175 area managers will come together in November 1991 for their first-ever meeting. The concrete, measurable, and substantive achievements of the community banking team will serve as an encouraging and energizing backdrop.

execution. And it is precisely the speed and quality of execution—the trade-offs among functions, business units, geography, and customers—that the network is designed to change.

Information—Visible and Simultaneous

No organization of two or more people can function without information. Indeed, in any organization, the character of information flows is one of the most critical variables determining the speed and accuracy with which decisions get made—and thus the quality of execution. Two companies with identical structures will behave very differently based on

the answer to a simple question: Who receives what information when, and why do these people (as opposed to others) receive it? In most large companies, the flow of information remains incomplete and sequential and thus prone to distortion and manipulation.

In a network, especially a global network that extends across borders, information must be visible and simultaneous. When members of the network receive the *same* information at the *same* time, and receive it quickly, business decisions take on a different character. Disagreement over substance no longer generates damaging personal conflicts or organizational politics; personal conflicts arise when information flows are selective or secret. More to the

point, disagreements themselves are reduced. Most members of a network, when faced with an impartial set of facts, tend to arrive at roughly the same business options for a given set of goals. The visibility and simultaneity of information improves the quality of decisions.

Some of what I mean by information is hard data on performance, the operating and financial indicators that capture the pulse of the company. At Conrail, for example, all 46 members of the network are connected through a management information system called Commander. They receive daily reports on critical business indicators: traffic levels, carloads, revenues per ton, and many others. Sharing this data openly and immediately and using electronic messages to allow people to evaluate the information enriches the business perspectives of network members, keeps them updated and focused on the company's performance, and allows managers from different parts of the company to offer their unique perspectives on specific business developments.

But data is in many respects the least important dimension of information. The network must also share openly and simultaneously each member's experiences, successes, and problems, soft information that can't be captured in databases and spreadsheets and that remains hidden for as long as possible in most traditional organizations. This is the kind of sharing that builds trust, empathy, and secure relationships. It also broadens the participants. They begin to see the organization through multiple viewpoints and understand more instinctively the pressures, challenges, and capabilities of functions and business units outside their own traditional boundaries.

Consider the case of Armstrong World Industries. In late 1989, Armstrong created five cross-border, cross-functional networks to begin the process of globalizing its businesses. Armstrong is one of the few companies with a strong international presence in many of its product lines, but it can hardly be considered a model global organization. It is a product of its conservative roots in the Pennsylvania Dutch country. Most decision-making power resides in its Lancaster headquarters, and virtually all R&D is still conducted there.

These "global teams"—one each for flooring, building products, insulation, gaskets, and textiles—have been working for more than a year to increase cross-border collaboration and to make more effective decisions on global-local trade-offs. They have held meetings outside the United States, identified business priorities, and begun to solve real problems.

In the last 18 months, the building-products network has visited all of the group's factories in Europe, developed sourcing plans to redesign the flow of products between Europe and the United States, and encouraged Lancaster R&D to tailor new products for the Asian market. (The new R&D responsiveness has increased Armstrong's share of the Korean building-products market from virtually zero to 15%.) The network has also encouraged lower ranking managers to emulate network interactions. Plant managers in the building-products group have already held two global conferences—intensive sessions in which they share technical information and operational insights.

Still, network members understand that much work remains to be done and that their work requires frequent contact and dialogue. Yet these managers are based thousands of miles from each other, travel widely, and find it almost impossible to gather physically more than three or four times each year. So they have devised a simple technique to share and react to hard and soft information—regular conference calls in which all members of the network participate all the time. This may seem a modest technique, and, technically speaking, it is. But it works because the members have learned to trust each other—and because sharing and reacting to new information fully and frequently enhances that trust.

For example, the ten-member building-products network includes managers from Pennsylvania, Europe, and the Pacific. At least every other Monday at 7:00 A.M. Lancaster time (which turns out to be a convenient time for all ten managers worldwide), the network participates for at least an hour in a global conference call. Henry Bradshaw, an Armstrong group vice president and the leader of the building-products network, describes the substance of the calls: "We talk about business conditions. We talk about competitors. We talk about service, which is especially important in the Pacific. We talk about particular orders. We talk about new products. Europe wants to know where the labs are with a new kind of ceiling board that they think will be a big hit in their market. Simple as they sound, these conference calls have been very effective. Before we created the global network, I didn't know most of the guys on it. And we had complicated communication channels; important information got lost. Today we're on a first-name basis. The more we talk, the more we want to talk. The more information we share, the more natural it becomes to share it."

Armstrong also shares openly and simultaneously a third critical kind of information—how the network evaluates its own performance. Recently, senior management polled each member of the

network with a specially crafted survey designed to measure how behavior is changing and whether the group is producing tangible results. The surveys had four core themes: progress on global business projects, the quality and frequency of global communication, changes in individual mind-sets, and the global team process. The questions were direct: How often do you communicate with your team members? To what extent has your ability to see a broader global picture of the business grown? To what extent has your behavior been inhibited because of the reward system? What is the nature of conflict resolution during team meetings? What steps have you taken personally to build the social architecture? The answers almost always involve numerical rankings or choices among specific alternatives—a way to keep the information concrete and comparable over time as management repeats the exercise.

This kind of detailed evaluation often allows top management to act more quickly or more decisively than it otherwise might. For example, Armstrong recently announced a corporate streamlining that simplifies global reporting relationships. This streamlining was a direct outgrowth of the networks' self-evaluations. The more the global networks worked on concrete problems, the more convinced they became that the hierarchy needed simplification. The feedback surveys documented wide agreement and a need for urgency, so top management took action. In effect, the networks helped reshape Armstrong's corporate structure.

Armstrong executive vice president Allen Deaver, emphasizes this spillover effect: "The creation of the global teams and the measuring and sharing of members' perspectives on their work and the company helped us make better decisions about people and organization. This change is designed to facilitate the work of the teams. It is natural, logical, and evolutionary—and perceived as such. So we expect it to generate energy rather than confusion. It is perfectly in line with policies the teams themselves endorsed."

Sharing information openly, visibly, and simultaneously is one of the most important dimensions of sustaining a network. Over time, the free flow of information allows networks to become self-correcting. New information inspires debate, triggers action, generates offers of assistance from network members—without instructions from above. Networks cannot altogether abolish personal and departmental rivalries. But sharing information openly makes them visible and encourages people to redirect their energies in constructive directions. It eliminates the need for checks and checkers and becomes a central building block in improving managerial productivity.

Measuring Performance: New Criteria, New Systems

The single most important lever for reinforcing behavior in networks is evaluation. Every manager, regardless of position or seniority, responds to the criteria by which he or she is evaluated, who conducts the review, and how it is conducted. In most organizations, even those committed to cross-functional collaboration, reviews are still based on performance against departmental budgets or functional goals and are still conducted vertically.

These traditional reviews are sharply at odds with networks. Vertical reviews encourage turf mentalities. Functional reviews promote narrow vision of the business and discourage horizontal collaboration. For a network to thrive, top management must focus on behavior and horizontal leadership: Does a manager share information willingly and openly? Does he or she ask for and offer help? Is he or she emotionally committed to the business? Does the manager exercise informal leadership to energize the work of subnetworks?

Admittedly, these are difficult criteria to quantify, which is why they seldom figure into performance reviews. But in a network, they become the central measures of performance, the vital criteria for assigning increasing general management responsibility. Senior management must find ways to make these criteria precise, to demonstrate that they are the basis for rewards and promotion within the organization, and to share them among all members of the network. In so doing, management reduces the old-boy-network style of vertical promotion politics.

Royal Bank of Canada has taken the lead in devising new performance metrics that reflect the behavioral imperatives of networks. Top management has developed a one-page statement that specifies the five new criteria by which the bank's top 300 executives will be evaluated. These criteria are crucial ingredients in succession planning and career development. And they are noteworthy precisely because they emphasize behavior and mind-set rather than functional expertise. Although the document itself must remain confidential, these excerpts suggest the qualities it emphasizes:

A strong business-profit orientation: instinctively thinks customer needs, customer service; understands the anatomy of the economic structure of the business; strong innate instincts for making money.

Demonstrated ability to accept accountability, assume leadership and initiative: raises standards constantly as the environment changes; by personality and chemistry, is open and secure in assuming the

initiative in building leadership, without horizontal power or authority; believes in sharing information and engendering trust; less control mentality, more empowering mentality; team builder.

Demonstrated record for making a "qualitative shift" and impact on the bank: has shown the vision and courage to change things, not just run things; willingness to experiment.

Astute in the selection of people: demonstrated evidence that this person has the judgment and the security to select and build a team of superior people; willing to cut losses.

Intellectual curiosity and global mind-set: has the mental makeup for learning continuously about global developments, technology, etc. from the outside world.

Royal Bank has also devised an ambitious evaluation program called the "leadership review process" to put these criteria into practice. The new process is a sharp break with the past. Under the old system, a committee of senior executives (the chairman, the president, four other top executives, and the director of personnel) convened twice a year to review the performance of the bank's top 200 or so managers. Each was assigned to one of three lists—the "A" list, the "B" list, and the "C" list—that reflected their perceived career potential at that point in time. "A" list members were high performers capable of moving into top management; "B" list people were promotable but not outstanding; and "C" list members were not promotable.

This process had the virtues of simplicity and efficiency, and top management was largely satisfied with the outcomes. But there were at least two serious weaknesses, especially for an organization committed to collaboration through networks. First, knowledge of a manager's leadership and personal styles (as opposed to quantifiable business results) was limited to the handful of top executives in the room, few of whom had worked directly with the managers under review. Also, the standards of evaluation, especially with respect to behavior, were more intuitive than explicit. The review team could see in black and white whether a manager's department was running ahead of or behind budget and by what percentage. But how could it evaluate with any clarity how managers shared information, how eagerly they worked to solve problems outside their domains, how effectively they led without authority?

The new system uses a four-step process to overcome both weaknesses. Here is an abbreviated description. First, the manager under review writes a statement of career aspirations and a self-appraisal against the performance criteria. Next, the manager submits a list of colleagues to be interviewed by a trusted executive about his or her performance. (Top

management's selection of the interviewer is uniquely important; he or she must be widely regarded as honest, apolitical, and seasoned in business judgment.) The list must include at least 7 names (3 peers, 3 subordinates, and 1 boss) but can go as high as 15. The interviews run for an average of one hour and, like the criteria themselves, are meant to be subjective and to focus on behavior. These are not mere note-taking sessions by a human-resource staffer or scripted conversations to rank-order executives along a few obvious dimensions. The interviewer is a savvy, senior-level player with keen insights into other executives. He probes to elicit each individual's opinions and thoughts, always in the context of the business.

Next, the interviewer prepares a one-page profile of the executive's leadership capabilities. This profile, along with the self-assessment, goes for final review to the president and the chairman. In "feedback sessions," the interviewer discusses the review with the executive and allows him or her to express reservations and reactions.

The leadership review process represents an enormous commitment of time and resources. Indeed, after two years, the bank has still not completed its evaluations of all 200 top executives. But think of its powerful impact on behavior and motivation—even beyond the 200 executives. The dialogue through which top managers devised the performance criteria was itself a valuable learning exercise for them and for everyone who sees the criteria. For the first time, standards of effective behavior have been made visible and concrete. Moreover, the new evaluation system influences the values and behavior of managers interviewed about the performance of their peers and superiors. These managers (many of whom get interviewed about more than one executive) listen to the questions, formulate judgments about individual leadership, decisiveness, and accountability, and become more aware of their own values and behavior in the process. Finally, the promotion of executives based in part on the review—people who might not have been promoted under the old system—sends a visible and powerful message throughout the bank about how management values horizontal leadership and behaviors that sustain the network.

Networks offer a promising alternative to the two-dimensional lens of strategy and structure through which most senior managers evaluate their organizations. By addressing the character of the interactions among a select group of managers, rather than the formal relationships among hundreds or thousands of managers, networks begin to give substance to the values that CEOs so often invoke—trust, teamwork, empowerment—but so seldom deliver. Over time,

the members of the network influence values and behavior both above and below them in the larger organization. In this way, networks become an essential building block in the creation of boundaryless organizations.

The companies I have observed understand that their networks remain in the early stages of development. But their success thus far—at Conrail, Dun & Bradstreet Europe, Royal Bank of Canada, Armstrong World Industries, and the other companies I researched—offers evidence of the power of this approach and its impact on real economic value. The

performance of networks should also go a long way to overturning the fashionable (and all-too-convenient) perception of middle managers as obstacles to corporate change. Middle managers are not born defensive and narrow-minded. They learn their behaviors from those above and around them. Most people want to cooperate and collaborate. They would prefer to innovate than to block. By forging a strong set of relationships and values, networks reinforce managers' best instincts—and unleash emotional energy and the joy of work.



Kao Corporation

Introduction

In March 1985, Kao Corporation, Japan's leading marketer of detergents and personal care products, faced a new competitive challenge. Kao learned from its Hanshas (wholesalers who were independently owned but handled only Kao products) that Procter & Gamble Far East (P&G), which began test marketing disposable diapers in Japan in 1977, was about to launch an improved version of its Pampers brand in Japan. The improved Pampers brand had been developed locally for the Japanese market. The absorbent in the new diaper was made of polymer. The diaper incorporated a moisture-proof waist shield to prevent leaks.

From 1977 to 1980, Pampers had been the only nationally marketed disposable diaper in Japan. Even with product quality problems, Pampers held a 90% share of the 17.5 billion yen¹ market by 1980. However, after the Japanese manufacturer Uni-Charm launched its Moony brand in 1981, followed by Kao's Merries brand in July 1983, P&G's share had dropped to 8%. By December 1984, Kao held 32% and Uni-Charm 50% of a market that had grown to 46 billion yen.

Kao learned from its Hanshas that P&G planned to spend 1.2 billion yen on Pampers advertising in 1985 and to distribute 1.5 million samples door-to-door in major metropolitan areas. A new Japanese plant to manufacture the improved Pampers was about to come on line; this would permit P&G to reduce its prices on Pampers while retaining margins. P&G was expected to phase out its existing Pampers line to make way for the improved product.

Kao marketing executives had tangled with P&G before in Japan and other east Asian markets with mixed results. P&G's 1985 worldwide sales of 2.7 trillion yen compared to Kao's 1985 sales of 369 billion yen. "P&G was a scary company," said Toshio Takayama, director of the office of the president. "It had the capacity to threaten us much more than did Uni-Charm, our principal domestic competitor."

Research Assistant Aimee L. Stern and Noriko Kameda, Director, Office of Asian-Pacific Relations prepared this case under the supervision of Professor John A. Quelch as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. Proprietary data have been disguised.

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1. Yen to U.S. dollar exchange rate was 227 in 1980 and averaged 235 between 1981 and 1985.

The following options were available:

1. Maintain the current marketing strategy.
2. Increase advertising spending for the Merries brand.
3. Develop a new advertising campaign for Merries.
4. Introduce a new, improved and higher priced version of Merries.
5. Develop a new, low-priced version of Merries or a similar "fighting" brand without the Merries name.

Company Background

The predecessor of the current Kao Corporation, the Nagase store, was established by Tomiro Nagase in 1887. Nagase's first product was a refined toilet soap that was used as a facial wash. Nagase tried to make the quality of his home-made soap as good as that of the imported brands. In Japanese, Kao meant face. Kao's symbol, a crescent moon with a human face, was adopted because the moon represented beauty and cleanliness.

As it grew, Kao modeled some of its operations, management tactics and production facilities on those of U.S. corporations. In the 1930s, Tomiro Nagase II, the first son of the founder, inspected U.S. and European soap and chemical plants and then reorganized Kao's production facilities as well as the advertising and planning departments, based on what he had learned. He also launched Kao's first shampoo and detergent, both of which became nationally marketed products within five years.

During the same period, a young technician named Yoshio Maruta entered the company. The applied chemistry graduate achieved the hydrogenation-dehydration process of coconut oil in 1939. He was eventually promoted to the presidency of Kao in 1971, a position he still held in 1985. Takayama described Maruta as "a charismatic, popular and strong leader, different from the usual Japanese company president." Maruta was often seen in line at Kao's cafeteria in its Tokyo headquarters.

Maruta focused Kao's research and development efforts on surfactant products, active chemical agents used to clean surfaces. Under his leadership, Kao launched Laurier sanitary napkins in 1978; the Sofina line of cosmetics in 1982; and Biore U, a body cleanser that did not irritate the skin in 1984.

In the late 1970s, Maruta stated: "We don't want to win just the National Athletic Championship but also the Olympic Games. Kao's ultimate goal is to become the number one competitor to P&G worldwide."² Maruta established subsidiaries in developing countries such as the Philippines, Spain, Mexico and Indonesia for industrial chemical production. He also established joint ventures in Taiwan, Thailand, Hong Kong, Singapore, Malaysia, Indonesia, and the Philippines. The joint ventures in Hong Kong and Singapore only sold Kao's consumer products while the other joint ventures both manufactured and sold Kao's products.

2. Nomura Institute of Management, Kao case study, 1984.

During the 1970s, Kao formed two joint ventures with Colgate Palmolive Co.; one to market hair-care products in the United States, the other to develop oral hygiene products for the Japanese market. The two companies, however, had very different management philosophies. In addition, Kao had a less hierarchical management structure that emphasized consensus decision making. The partnership was dissolved in 1985.

By 1985, only 3% (12 billion yen) of Kao's total sales was derived from exports and Kao's foreign subsidiaries accounted for only 30 billion yen in sales of locally manufactured products.

Company Organization

In 1985, Kao was organized into product divisions including household laundry and cleaning products (42% of sales); cosmetics and personal care products (28%); and sanitary products (including diapers and sanitary napkins) (15%). Kao's remaining sales were of industrial chemical products including fats and oil such as industrial margarine, refined alcohol and surface activators, polyurethane and polyester. The Kao organization chart is presented in Exhibit 1.

Kao was a vertically integrated company. Since its formation, Kao had made many of the chemicals used in its consumer products. The company also effectively controlled the independently owned wholesalers who sold only Kao's products to retailers. In the diaper business, for instance, Kao manufactured all three parts of the diaper, the top sheet, the absorbent and the back sheet in its two Japanese manufacturing plants. In 1983 and 1984 Kao invested a total of three billion yen, followed by an additional five billion yen in 1985 to build eight diaper production lines in these plants. Each line could produce 100 million diapers a year. As of 1985 the plants were operating at 60%-70% capacity.

Kao placed a greater emphasis on R&D than most Japanese consumer products companies. Twenty-five percent of its work force was involved in R&D. In 1985, Kao spent 12 billion yen on R&D. Kao ran 19 domestic R&D laboratories, including the Tokyo Research Laboratory, which specialized in cosmetics, perfumes and flavors, and the Tochigi Research Laboratory which focused on corporate research.

Kao held frequent in-house R&D conferences attended by top management, R&D staff, and any employee who wished to attend. Researchers reported on studies in progress and attendees offered advice from both academic and commercial perspectives.

Kao adopted the product management system in 1966. Kao had seven product management groups in 1985 staffed by 30 product managers. Kao product managers were typically in their mid-forties and more experienced than their U.S. counterparts, and often had R&D backgrounds. They were expected to grow their brands through product and marketing program innovations.

Kao rarely test marketed products because consumer markets in Japan were fiercely competitive; when full-scale commercialization of a new product was delayed, competitors had more time to develop and launch similar products, thereby limiting the market share available to the first entrant. Instead, Kao expected each product manager to answer a set of basic questions before he or she launched a new product. Was the product useful to consumers and society? Were Kao's technological capabilities fully utilized? Was the product's performance superior to that of substitute products on the market? Had consumer in-home use tests been properly

conducted? Did the marketing communications plan focus on product attributes that could be emphasized successfully to both consumers and the trade?

The Diaper Market in Japan

The Japanese disposable diaper market expanded rapidly after P&G's introduction of Pampers in 1977. At the time of Pampers launch, only 1%-2% of Japanese mothers regularly used the disposable diapers made by a few local manufacturers. Manufacturer sales of disposable diapers increased from 1.7 billion yen in 1977 to 11 billion yen in 1979. In 1979, Pampers diaper sales were valued at about 10 billion yen. The number two company, Honshu Paper Co., had sales of only 0.3 billion yen.

Japanese mothers traditionally used cloth diapers that were hand sewn from old cotton kimonos. Many mothers believed that using products they had worn previously helped cement the bond between themselves and their children. Disposable diapers were only used on long trips when it was difficult to find places to wash and dry cloth. In January 1985, there were 2.9 million infants aged 24 months and younger in 8%-9% of Japanese households who could potentially wear disposable diapers in Japan. Mothers used about 10 diapers per day. Of the 1.4 million children born in 1984, 602,000 were first children, 563,000 were second children and 267,000 were third children. The typical Japanese family had two children.

Several cultural and sociological barriers impeded market penetration of disposable diapers in Japan. Many generations of the same family lived together, especially in rural areas. Mothers-in-law concerned themselves directly with rearing their grandchildren. They reproached their daughters-in-law if they used disposable diapers. The mothers-in-law disliked disposable diapers because their use reduced workload and therefore implied a lack of affection on the mother's part for the child. Furthermore it was believed that, since the disposable diaper retained urine, the child remained comfortable despite having soiled itself. This lack of response to the child's discomfort was felt to impede the child's mental development. For all these reasons, many mothers felt guilty if they used disposable diapers.

However, only 31% of young Japanese mothers who responded to a Kao market research study conducted in October 1983 mentioned guilt as a reason for not using disposable diapers. Seventy eight percent cited product quality concerns; they felt that disposable diapers caused the baby discomfort and diaper rash. In addition, 77% mentioned high cost. Daily use of disposable diapers cost 10,000 to 13,000 yen per month. Cloth diapers cost 3,600 yen per month. Diaper services, which rented cloth diapers to mothers, washed and returned them, cost about 7,500 yen per month.

Despite these obstacles to the use of disposable diapers, 66% of respondents agreed that they helped to lighten the workload. At the same time, opportunities for product improvement were identified; 54% agreed that life would be easier if the number of diaper changes at night could be reduced. Some mothers used cloth diapers during the day and disposables at night.

Kao started test marketing paper diapers in Okinawa, an island in the southern part of Japan, in 1980. Kao used diapers purchased from Colgate Palmolive and sold them under the brand name Carine. After 18 months in test marketing, Kao concluded that Carine was more absorbent than cloth but still leaked. At that time, Kao used a highly absorbent polymer in its Laurier brand of sanitary napkins and began developing a diaper that used the same material.

Many Kao marketing executives—most of them were men—were skeptical about the potential for a disposable diaper entry. Japanese fathers were typically not involved in child rearing and had limited awareness of the burden cloth diapers represented for their spouses. Nevertheless, Kao launched its new Merries brand in Osaka in July, 1983, and it quickly gained a 50% share. Merries was then rolled out across Japan during 1984. The Merries diaper was about half the size of the conventional Pampers diaper. One of Kao's principal Japanese competitors in sanitary products, Uni-Charm, introduced the similarly sized Moony brand about the same time. **Exhibit 2** illustrates the construction of the major diaper brands. In 1985, raw material costs for a Merries medium size diaper were 20.5 yen.

"After test marketing we knew we had a winner," said a Kao marketing executive. "Merries was more absorbent than the other two diapers on the market and it fit babies better. All we had to do was convert Japanese mothers into disposable diaper users."

Although by 1985 almost all Japanese households with infants under two used disposable diapers at least once a year, penetration of the potential market remained small. Even in metropolitan Tokyo—an area thought to be receptive to innovation—households that were exclusively using disposable diapers accounted for only 15% of all potential diaper usage occasions.

Japanese mothers often used disposable diapers for their second child, even though the first child was brought up in cloth diapers. Analysts predicted that disposable diapers would represent a 100 billion yen market at retail in 1986, growing to a 300 billion yen market within 10 years. **Exhibit 3** compares the retail prices and package counts of the diapers sold by Uni-Charm, P&G and Kao in 1985. The projected prices of new Pampers are also included. Retailer and wholesaler margins were as follows:

	Retail Margin	Wholesale Margin
Merries	25%	12%
Moony	25	12
Pampers (~ 1984)	18	10
New Pampers (1985 ~)	25	13

By the second half of 1984, Merries was delivering an operating profit of 9% of sales, as indicated in **Exhibit 4**. Merries had captured 32% of the diaper market in 1984 as shown in **Exhibit 5**. However, Kao obtained samples of P&G's new product early in 1985 and tested Merries against both the new Pampers and Moony. They were very disappointed with the results. Merries was the least absorbent:

Diaper Absorbency (grams of artificial urine)

Size	Merries	New Pampers	Moony
Small	220	450	251
Medium	344	565	381
Large	427	641	449

Competition

Kao's principal competitors in the disposable diaper market were P&G and Uni-Charm.

P&G (Procter & Gamble) P&G and Kao had competed in Asian markets ever since P&G entered Japan in 1972 when it purchased 50% of the shares of Nippon Sunhome Company. That year, P&G introduced Cheer laundry detergent in Japan. However P&G's heavy marketing of the brand led retailers to use Cheer as a loss leader (a popular brand name sold at a discount to draw customers into a store) and soon it became difficult for them to make money on the brand. Nevertheless, P&G achieved a 10% share of the laundry detergent market by 1975.

Takayama described P&G's management as "confident and very aggressive in tackling domestic Japanese competitors. P&G's approach was to use its financial and marketing muscle, positioning its new product introductions to capture market share from competitors in a single rush."

The two companies were similar in many respects. They both used a crescent moon with a human face as a corporate symbol. Both were the leading advertisers in their home countries, invested heavily in R&D and committed to product quality. However, Kao's sales per employee were 40% higher than those of P&G worldwide and its inventory in Japan turned nearly 10 days faster than P&G's due to Kao's early computerization of trade account order, delivery and payment information and its development of a sophisticated automated ordering system.

P&G introduced Pampers in 1977. Pampers had a "dry-touch liner," a synthetic fiber used as a top sheet that rested next to the baby's skin. It funneled wetness away from the infant and kept the baby's skin dry and comfortable. By 1982, P&G had completed a 10 billion yen plant which produced 2,000 tons of diaper material annually.

Pampers became well known throughout Japan but had a questionable reputation. The design of original Pampers was not adapted to the smaller size of Japanese infants and, as a result, often leaked. As in the United States, P&G packaged the diapers in large cardboard boxes which were often dented in transit or in shelving in drugstores and supermarkets. Mothers inferred from the appearance of the boxes that the diapers inside were of inferior quality.

Uni-Charm Uni-Charm was established in 1961 as a manufacturer of fireproof construction materials. By 1985, Uni-Charm had annual sales of about 60 billion yen, 60% from disposable diapers, 35% from sanitary napkins and only 5% from building materials.

In the early 1970s, Uni-Charm introduced a sanitary napkin with absorbent polymer that it later used in its Moony disposable diapers. Polymer kept babies drier than Pampers and alleviated the problem of diaper rash from wet cloth. Uni-Charm packaged Moony in plastic bags with convenient handles for easy portability. Moony cost 25% more than Pampers at retail.

In November of 1983, Uni-Charm introduced a second brand, Mamy-Poko, a lower-priced diaper, that was made from less expensive material than Moony and was, consequently, cheaper to produce. Early advertising emphasized the savings from using Mamy-Poko: "Five diapers a day is equal to a cup of coffee when you use Mamy-Poko." By early 1985, Mamy-Poko, priced about 15% below Moony, had secured a 17% share of diaper volume.

Distribution Channels in Japan

Distribution channels in Japan was comprised of a complex series of relationships involving several tiers of wholesalers and hundreds of thousands of retailers.

P&G and Uni-Charm both sold products through a network of primary and secondary wholesalers who sold to approximately 250,000 retailers. Kao operated through Hanshas, which distributed its products exclusively. In return, the Hanshas expected a steady stream of new products from Kao to keep their sales and profits rising. Kao sold 65% of its consumer goods through Hanshas; the remaining 35% was sold through independent wholesalers in the same manner as P&G and Uni-Charm.

In 1964, Kao coordinated the conversion of its wholesalers into Hanshas. For example, in 1981 it built modern physical distribution centers to serve its Hanshas. Initially, after the conversion, there were 128 Hanshas. By 1985 mergers, undertaken to promote efficiency, had reduced the number of Hanshas to 24. Kao developed a unit load system that speeded transportation from factories to Hansha warehouses and a computerized ordering system which enabled them to receive and deliver products within 24 hours of placing an order. Exhibit 6 diagrams the distribution channels of the three companies.

Initially, P&G had problems managing the Japanese distribution system. It first distributed through 2,400 wholesalers, many of whom serviced overlapping territories. P&G found it hard to develop the necessary close relationships with its wholesalers and its relatively small field sales force was unable to call frequently on the wholesalers or on the 5,000 largest retailers.

Kao employed MIS, a Marketing Intelligence System, to track sales by product, region and market segment and to provide market research data. Kao Hanshas installed Kao data terminals in their offices; these provided up-to-date product movement information that facilitated production planning and inventory controls. Kao also established a 24-hour "hot line" which consumers could call with complaints or questions about Kao products.

Disposable diapers were sold through 50,000 independent drugstores and 200,000 grocery and convenience stores, of which only 14,000 were outlets of chains. Discount stores and department stores accounted for about 5% of total diaper sales. According to A.C. Nielsen data, the percentages of drugstores and supermarkets selling diapers from 1983-1985 were:

Diaper Distribution by Channel

	1983	1984	1985
Food channel	20%	24%	27%
Drug channel	72	72	73
Food and drug	33	36	39

When purchased by P&G largely for its access to distribution, Nippon Sunhome sold through 425 wholesalers who stocked miscellaneous household products, stationery, groceries, drugs and cosmetics. P&G originally distributed its diapers through drugstores because it already

had relationships with them and their wholesalers. In 1981, when Uni-Charm launched its Moony brand, distribution efforts focused on supermarket channels.

Japanese homes were small; limited storage space necessitated frequent shopping. Mothers typically went shopping every other day. In urban areas, many stores were located within convenient walking distance of homes.

Japanese drugstores and grocery stores were often no larger than 150 square feet. They devoted, on average, two shelves to baby goods such as infant formula, bottles and diapers. Stores rarely stocked more than two or three boxes of each diaper brand on the shelf. They looked to their wholesalers to make frequent deliveries to keep their shelves stocked. Disposable diapers accounted for 5%-10% of the total retail sales of food and drug stores. Both outlets sold diapers at similar retail prices.

For volume shopping, Japanese mothers shopped at supermarkets such as Daiei and Ito-Yokado. These stores had baby sections that were often as large as an entire drugstore. Department stores sold both cloth and disposable diapers but only as a traffic-building convenience item to draw customers into the stores.

Advertising and Promotion

In Japan, television and newspapers were the primary advertising media. There were 39.5 million television households in Japan in 1985, with about 50% concentrated in the metropolitan areas of Tokyo and Osaka. Seventy four percent of Japanese households owned more than one television compared to 63% in the United States. Only a fraction of Japanese women with young children held part-time or full-time jobs. Housewives watched television programs for an average of five hours per day.

In the toiletries category, manufacturers spent 63% of their advertising budgets on network television, 20% on magazines, 13% on newspapers and 3% on radio. Kao was the top Japanese advertiser in 1984, spending about 31 billion yen on network television advertising and six billion yen on promotion and sampling. A breakdown of media advertising expenditures in the diaper category is provided in Exhibit 7.

Kao executives believed in advertising that consistently promoted the same key benefits to build brand images over time. Kao used 30-second national television advertisements to launch products, later shifting to 15-second local television advertising spots as the new products gained recognition and popularity.

In Japan, the same advertising agency often worked for several manufacturers with competing brands. It was said that Japanese agencies could keep all records confidential and that groups assigned to individual accounts would not share information. Kao marketing executives, however, were concerned about possible breaches of confidentiality so did not share any agencies with P&G.

When Kao launched Merries, it advertised the generic benefits of disposable diapers while also attempting to convince mothers that "magical" Merries would help their babies sleep better at night. It pointed out that the diapers absorbed well and did not leak, did not retain excess moisture which could lead to diaper rash, and were thinner than the competitive diapers on the

market. The 1985 campaign stated that a mother needed only four Merries diapers a day and that, even on cold nights, only one diaper was needed; the mother could therefore get a good night's sleep and feel better in the morning.

Kao spent 334 million yen on sampling diapers between April 1984 and March 1985. Kao distributed diaper samples through parenting classes and the pediatric units of hospitals. It launched a cooperative sampling venture with Meiji Milk Products Company; new mothers left hospitals with baskets containing Meiji formula, baby bottles and Merries. Kao also sampled Merries through drugstores.

Sampling had long been the primary promotional vehicle used by disposable diaper manufacturers. When P&G test marketed Pampers in 1977, it distributed 100,000-150,000 diaper samples through 70 part-time delivery men. At some apartment complexes, P&G sent in cars that announced by loudspeaker "Wave your hand from the window if you have a baby and you'll get free Pampers." Each trial package contained seven diapers.

Pampers advertising in 1980 compared cloth diapers with disposable diapers and pointed out that babies' bottoms remained drier with disposables. In 1981, P&G dropped the price of Pampers and increased sales promotion activity. The 1982 campaign emphasized that "over 500 hospitals use Pampers and doctors know best." In the summer, a new version of Pampers was launched with gathered pant legs for a better fit. This introduction was supported by cash-back coupons on boxes of Pampers.

In September 1983, Pampers added a ventilated diaper cover which allowed air to reach the baby and keep his/her bottom drier. In the fall, P&G offered a 500 yen refund to purchasers of each 24 pack. This was followed, in December 1983, by a free storybook offer for purchase proofs from two packs of Pampers and, in March 1984, by a bonus pack which offered extra diapers for the same price. In March 1985, P&G announced a new version of Pampers with a special moisture-proof waist shield to prevent leaks.

Uni-Charm introduced Moony diapers in 1981 with special leg and waist gathers to prevent leaks. In 1982 Moony launched an improved pants-type diaper with reusable tapes so mothers could check babies again and again. In 1983, a new moisture proof waist shield was added which could lock away three times as much urine as the old Moony. Each of these innovations was accompanied by a price increase. As a result, Uni-Charm was able to introduce Mamy-Poko in 1984 as a reasonably priced diaper that prevented leaks. Mamy-Poko was 20%-25% cheaper than other brands.

Exhibit 8 summarizes television advertising copy for the principal diaper brands.

Conclusion

Some Kao marketing executives were worried because new Pampers was far more absorbent than Merries. They argued for developing a new, higher-priced brand. Others contended that Uni-Charm was Kao's main competitor and therefore advocated launching a cheaper version of Merries to counter Mamy-Poko. These executives pointed out that it would be two years before a new diaper design could reach the market; the competitive situation, they argued, demanded short-term defensive action. A third group of executives were especially

concerned to avoid provoking a price or advertising war with P&G and Uni-Charm that could erode Merries' profitability.

Maruta called his top marketing executives to a meeting and asked them to present arguments for and against the marketing strategy alternatives available to Merries.

Exhibit 1 Organization Chart

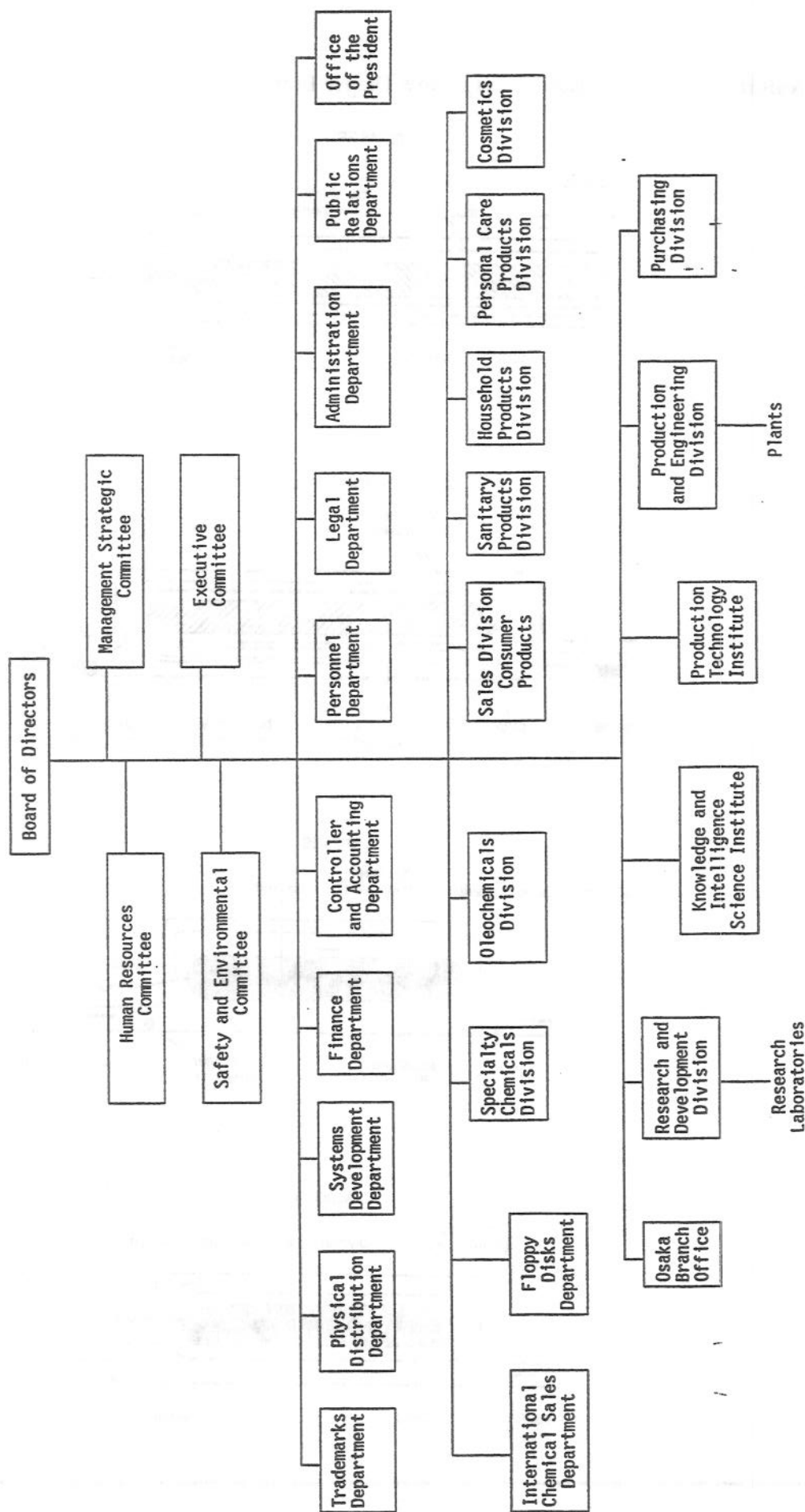


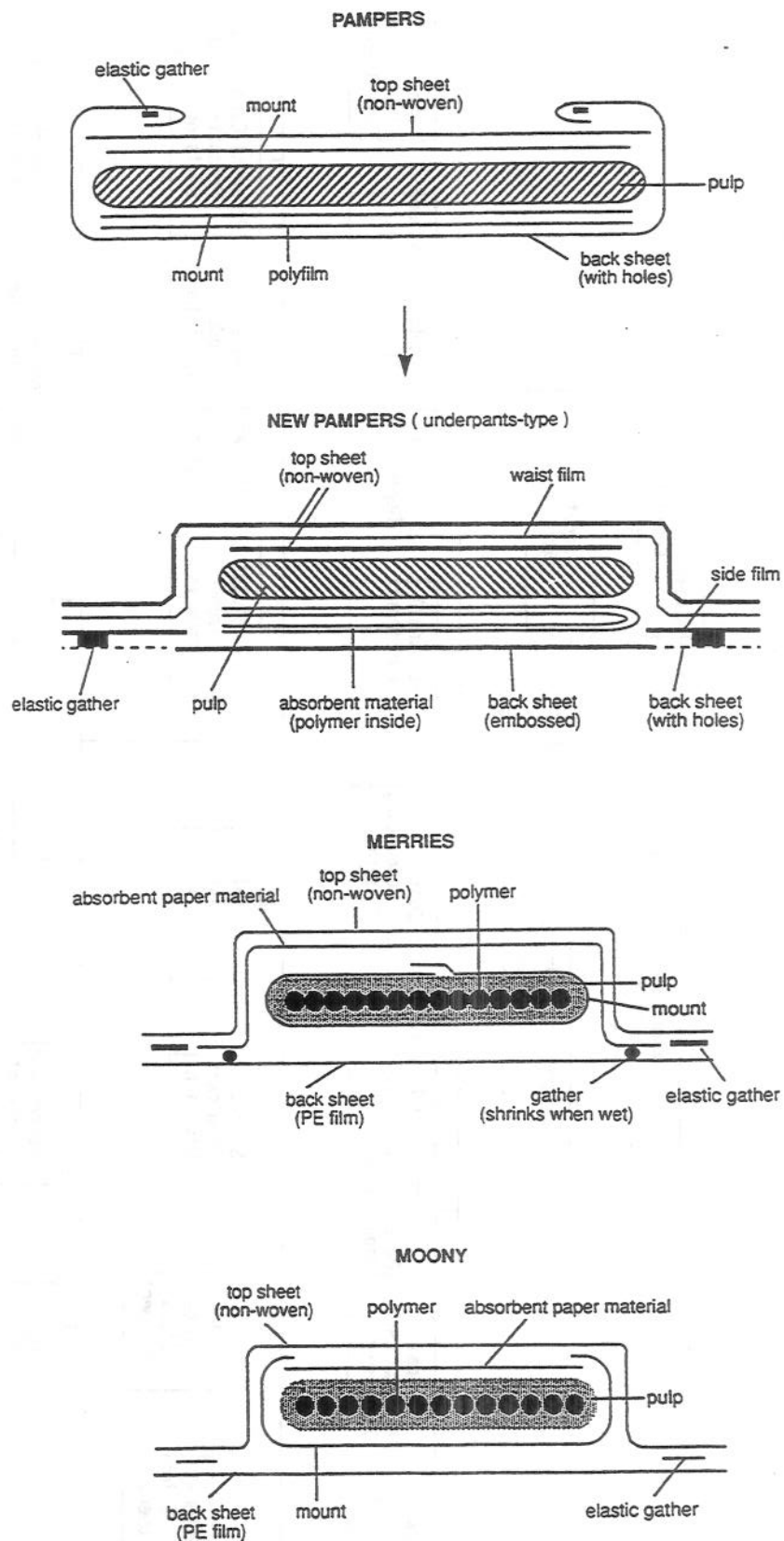
Exhibit 2 Cross-Section of Disposable Diaper Brands

Exhibit 3 Prices of Disposable Diapers by Brand and Package Size: 1984 (yen)

Merries (by Kao)			
Size and Pack	Pieces per Pack	Suggested Price	Price per Piece
S - Regular Pack	12	660	55.0
S - Economy Pack	24	1,260	52.5
M - Regular Pack	12	850	70.8
M - Economy Pack	24	1,640	68.3
L - Regular Pack	12	1,130	94.2
L - Economy Pack	24	2,180	90.8

Pampers (by P&G)-1984				New Pampers (by P&G)-1985			
Size	Pieces per Pack	Suggested Price	Price per Piece	Size	Pieces per Pack	Suggested Price	Price per Piece
S	24	890	37.1	S	30	1,720	57.3
M-1	17	890	52.4	M	24	1,720	71.7
M-2	15	890	59.3	M	48	3,070	64.0
L	14	890	63.6	L	20	1,720	86.0
LL	12	890	74.2	L	42	3,070	73.1

Moony (by Uni-Charm)				Mamy-Poko (by Uni-Charm)			
Size	Pieces per Pack	Suggested Price	Price per Piece	Size	Pieces per Pack	Suggested Price	Price per Piece
S	16	900	56.3	M	24	1,350	56.5
M	16	1,140	71.3	L	20	1,350	67.5
M	30	2,100	70.0				
L	12	1,140	95.0				
L	24	2,100	87.5				

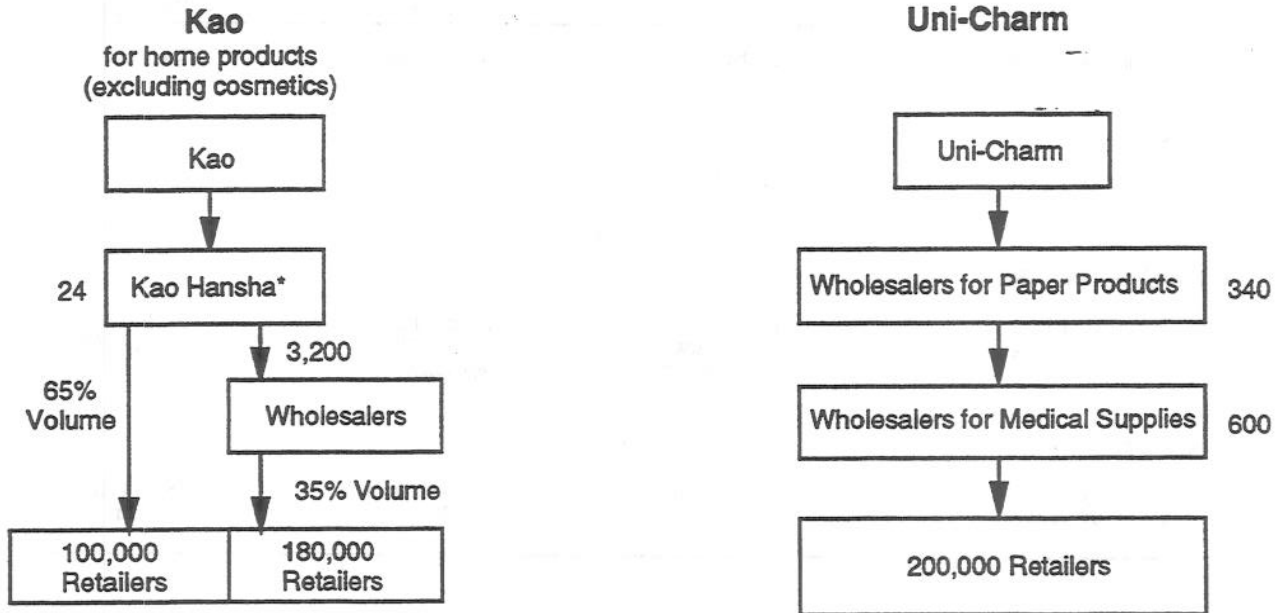
Exhibit 4 Merries: Profit and Loss Statements (million yen)

	Second Half 1983 October 1983-March 1984		First Half 1984 April 1984-September 1984		Second Half 1984 October 1984-March 1985	
Net sales	2,728.8	100.0%	5,011.0	100.0%	9,669.8	100.0%
Variable cost of goods	1,525.0	55.9	2,470.5	49.3	4,347.8	45.0
Variable selling expenses	<u>359.0</u>	<u>13.2</u>	<u>498.9</u>	<u>10.0</u>	<u>1,201.2</u>	<u>12.4</u>
Gross margin	844.8	31.0%	2,041.6	40.7%	4,120.8	42.6%
Fixed Expenses	1,216.0	44.6	1,645.6	32.8	2,269.5	23.5
(1) Manufacturing overhead	1,027.0	37.6	1,219.0	24.3	1,551.0	16.0
(2) Selling expenses	107.4	3.9	204.6	4.1	367.5	3.8
(3) Administration expenses	81.6	3.0	222.0	4.4	351.0	3.6
Marketing Expenses	660.7	24.2	1,364.4	27.2	965.8	10.0
(1) Advertising	194.9	7.1	643.0	12.8	566.6	5.9
(2) Sales promotion	<u>465.8</u>	<u>17.1</u>	<u>721.4</u>	<u>14.4</u>	<u>399.2</u>	<u>4.1</u>
Operating profit	-1,031.9	-37.8%	-968.4	-19.3%	885.5	9.2%

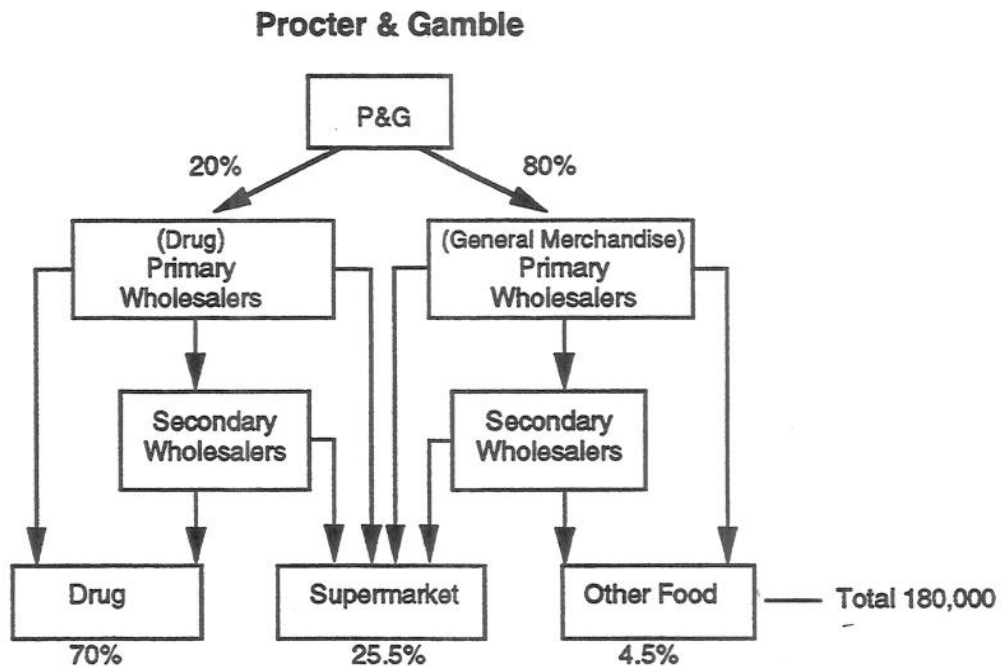
Exhibit 5 Diaper Sales and Market Shares for Major Brands

	1983	1984	1985 (Est.)
Total market (yen)	30 billion	46 billion	76 billion
Pampers:			
Sales (yen)	11 billion	7 billion	7 billion
Share of market	36%	15%	9%
Moony and Mamy-Poko:			
Sales (yen)	15 billion	20 billion	34 billion
Share of market	Moony 50% Mamy-Poko 13%	Moony 30% Mamy-Poko 16%	Moony 28%
Merries:			
Sales (yen)	2.5 billion	14.5 billion	25 billion
Share of market	8%	32%	33%

Exhibit 6 Diaper Distribution Channels of Major Japanese Competitors



*A sales company which wholesales only Kao products.



Source: Kao, Booz Allen Hamilton Japan

Exhibit 7 Media Spending by Major Diaper Brands Measurable (million yen)

Brand	Media	1980	1981	1982	1983	1984	1985E
Merries	TV	-	-	-	155.9	422.7	1,155.1
	Newspapers	-	-	-	-	0.3	-
	Magazines	-	-	-	-	-	-
	Total	-	-	-	155.9	423.0	1,155.1
Pampers	TV	1,338.5	1,396.9	1,436.5	1,583.2	1,095.6	1,174.1
	Newspapers	-	-	37.9	72.0	7.9	2.4
	Magazines	-	-	2.2	6.7	4.6	-
	Total	1,338.5	1,396.9	1,476.6	1,661.9	1,108.1	1,176.5
Moony	TV	-	422.2	811.0	686.9	879.8	994.3
	Newspapers	-	-	6.5	7.0	5.7	7.3
	Magazines	-	1.0	2.7	-	5.6	-
	Total	-	423.2	820.2	693.9	891.1	1,001.6
Mamy-Poko	TV	-	-	-	-	743.6	1,143.9
	Newspapers	-	-	-	-	1.3	0.6
	Magazines	-	-	-	-	-	-
	Total	-	-	-	-	744.9	1,144.5

Sources: Booz Allen and Hamilton Japan

Exhibit 8 Selected Diaper Brand Television Advertising Copy: 1982-1985**Merries 1983**

Wonderful diapers—Merries. Mom—"Good morning, you slept well without crying. Oh, your diaper is dry." If you use Merries, you need only use four diapers a day—one in the morning, the afternoon, the evening and one at night before baby sleeps. Only four because Merries absorbs up to three times the wetness and still keeps baby's skin dry. Merries has magic gathers which shrink when they get wet, preventing leaks. Baby is dry, comfortable and sleeps well. Merries—a new product from Kao.

Pampers 1982

1. For a Pampers Baby and Mommy, we have good news. The price of Pampers is now lower for mothers who use more Pampers—even one more diaper. We lowered the price of Pampers. Please check the price of Pampers at once. Pampers is taking a price cut (Baby's laugh).
2. (Cry of newborn baby) We want to keep his delicate skin smooth and healthy. Pampers' gentle smooth sheet locks away wetness. So the baby's delicate skin stays dry and smooth. Now Pampers is used by more than 500 hospitals across Japan. Caring for baby's delicate skin—Pampers.

New Pampers 1985

Baby Pampers—Peek-a-boo. I'm a completely new diaper. Special moisture-proof waist shield prevents leaks. New Pampers on March 27. Pampers—there are more secrets.

Moony 1983

Mischievous baby—Moony baby. We love Moony, Moony baby. We love Moony—with gathers, prevents leaks. Moony—no leakage. Moony baby, Moony baby.

Moony 1985

Good night Moony. Where's our god? Where's our god? He's sleeping in a diaper. At night Moony is best because its magic absorbent locks away wetness. Baby can sleep soundly until morning. Mom is also comfortable. Moony baby is sleeping.

Mamy-Poko 1985

A new Mamy-Poko is a reasonably priced diaper which prevents leaks.

Who Gets Power—and How They Hold on to It: A Strategic-Contingency Model of Power

Gerald R. Salancik
Jeffrey Pfeffer

Power is held by many people to be a dirty word or, as Warren Bennis has said, "It is the organization's last dirty secret."

This article will argue that traditional "political" power, far from being a dirty business, is, in its most naked form, one of the few mechanisms available for aligning an organization with its own reality. However, institutionalized forms of power—what we prefer to call the cleaner forms of power: authority, legitimization, centralized control, regulations, and the more modern "management information systems"—tend to buffer the organization from reality and obscure the demands of its environment. Most great states and institutions declined, not because they played politics, but because they failed to accommodate to the political realities they faced. Political processes, rather than being mechanisms for unfair and unjust allocations and appointments, tend toward the realistic resolution of conflicts among interests. And power, while it eludes definition, is easy enough to recognize by its consequences—the ability of those who possess power to bring about the outcomes they desire.

The model of power we advance is an elaboration of what has been called strategic-contingency theory, a view that sees power as something that accrues to organizational subunits (individuals, departments) that cope with critical organizational problems. Power is used by subunits, indeed, used by all who have it, to enhance their own survival through control of scarce critical resources, through the placement of allies in key positions, and through the definition of organizational problems and policies. Because of the processes by which power develops and is used, organizations become both more aligned and more misaligned with their environments. This contradiction is the

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most interesting aspect of organizational power, and one that makes administration one of the most precarious of occupations.

What is organizational power?

— You can walk into most organizations and ask without fear of being misunderstood, “Which are the powerful groups or people in this organization?” Although many organizational informants may be *unwilling* to tell you, it is unlikely they will be *unable* to tell you. Most people do not require explicit definitions to know what power is.

Power is simply the ability to get things done the way one wants them to be done. For a manager who wants an increased budget to launch a project that he thinks is important, his power is measured by his ability to get that budget. For an executive vice-president who wants to be chairman, his power is evidenced by his advancement toward his goal.

People in organizations not only know what you are talking about when you ask who is influential but they are likely to agree with one another to an amazing extent. Recently, we had a chance to observe this in a regional office of an insurance company. The office had 21 department managers; we asked ten of these managers to rank all 21 according to the influence each one had in the organization. Despite the fact that ranking 21 things is a difficult task, the managers sat down and began arranging the names of their colleagues and themselves in a column. Only one person bothered to ask, “What do you mean by influence?” When told “power,” he responded, “Oh,” and went on. We compared the rankings of all ten managers and found virtually no disagreement among them in the managers ranked among the top five or the bottom five. Differences in the rankings came from department heads claiming more influence for themselves than their colleagues attributed to them.

Such agreement on those who have influence, and those who do not, was not unique to this insurance company. So far we have studied over 20 very different organizations—universities, research firms, factories, banks, retailers, to name a few. In each one we found individuals able to rate themselves and their peers on a scale of influence or power. We have done this both for specific decisions and for general impact on organizational policies. Their agreement was unusually high, which suggests that distributions of influence exist well enough in everyone’s mind to be referred to with ease—and, we assume, with accuracy.

Where does organizational power come from?

Earlier we stated that power helps organizations become aligned with their realities. This hopeful prospect follows from what we have

dubbed the strategic-contingencies theory of organizational power. Briefly, those subunits most able to cope with the organization's critical problems and uncertainties acquire power. In its simplest form, the strategic-contingencies theory implies that when an organization faces a number of lawsuits that threaten its existence, the legal department will gain power and influence over organizational decisions. Somehow other organizational interest groups will recognize its critical importance and confer upon it a status and power never before enjoyed. This influence may extend beyond handling legal matters and into decisions about product design, advertising production, and so on. Such extensions undoubtedly would be accompanied by appropriate, or acceptable, verbal justifications. In time, the head of the legal department may become the head of the corporation, just as in times past the vice-president for marketing had become the president when market shares were a worrisome problem and, before him, the chief engineer, who had made the production line run as smooth as silk.

Stated in this way, the strategic-contingencies theory of power paints an appealing picture of power. To the extent that power is determined by the critical uncertainties and problems facing the organization and, in turn, influences decisions in the organization, the organization is aligned with the realities it faces. In short, power facilitates the organization's adaptation to its environment—or its problems.

We can cite many illustrations of how influence derives from a subunit's ability to deal with critical contingencies. Michael Crozier described a French cigarette factory in which the maintenance engineers had a considerable say in the plantwide operation. After some probing he discovered that the group possessed the solution to one of the major problems faced by the company, that of troubleshooting the elaborate, expensive, and irascible automated machines that kept breaking down and dumbfounding everyone else. It was the one problem that the plant manager could in no way control.

The production workers, while troublesome from time to time, created no insurmountable problems; the manager could reasonably predict their absenteeism or replace them when necessary. Production scheduling was something he could deal with since, by watching inventories and sales, the demand for cigarettes was known long in advance. Changes in demand could be accommodated by slowing down or speeding up the line. Supplies of tobacco and paper were also easily dealt with through stockpiles and advance orders.

The one thing that management could neither control nor accommodate to, however, was the seemingly happenstance breakdowns. And the foremen couldn't instruct the workers what to do when emergencies developed since the maintenance department keeps its records of prob-

lems and solutions locked up in a cabinet or in its members' heads. The breakdowns were, in truth, a critical source of uncertainty for the organization, and the maintenance engineers were the only ones who could cope with the problem.

The engineers' strategic role in coping with breakdowns afforded them a considerable say on plant decisions. Schedules and production quotas were set in consultation with them. And the plant manager, while formally their boss, accepted their decisions about personnel in their operation. His submission was to his credit, for without their cooperation he would have had an even more difficult time in running the plant.

Ignoring critical consequences

In this cigarette factory, sharing influence with the maintenance workers reflected the plant manager's awareness of the critical contingencies. However, when organizational members are not aware of the critical contingencies they face, and do not share influence accordingly, the failure to do so can create havoc. In one case, an insurance company's regional office was having problems with the performance of one of its departments, the coding department. From the outside, the department looked like a disaster area. The clerks who worked in it were somewhat dissatisfied; their supervisors paid little attention to them, and they resented the hard work. Several other departments were critical of this manager, claiming that she was inconsistent in meeting deadlines. The person most critical was the claims manager. He resented having to wait for work that was handled by her department, claiming that it held up his claims adjusters. Having heard the rumors about dissatisfaction among her subordinates, he attributed the situation to poor supervision. He was second in command in the office and therefore took up the issue with her immediate boss, the head of administrative services. They consulted with the personnel manager and the three of them concluded that the manager needed leadership training to improve her relations with her subordinates. The coding manager objected, saying it was a waste of time, but agreed to go along with the training and also agreed to give more priority to the claims department's work. Within a week after the training, the results showed that her workers were happier but that the performance of her department had decreased, save for the people serving the claims department.

About this time, we began, quite independently, a study of influence in this organization. We asked the administrative services director to draw up flow charts of how the work of one department moved on to the next department. In the course of the interview, we noticed that

the coding department began or interceded in the work flow of most of the other departments and casually mentioned to him, "The coding manager must be very influential." He said "No, not really. Why would you think so?" Before we could reply he recounted the story of her leadership training and the fact that things were worse. We then told him that it seemed obvious that the coding department would be influential from the fact that all the other departments depended on it. It was also clear why productivity had fallen. The coding manager took the training seriously and began spending more time raising her workers' spirits than she did worrying about the problems of all the departments that depended on her. Giving priority to the claims area only exaggerated the problem, for their work was getting done at the expense of the work of the other departments. Eventually the company hired a few more clerks to relieve the pressure in the coding department and performance returned to a more satisfactory level.

Originally we got involved with this insurance company to examine how the influence of each manager evolved from his or her department's handling of critical organizational contingencies. We reasoned that one of the most important contingencies faced by all profit-making organizations was that of generating income. Thus we expected managers would be influential to the extent to which they contributed to this function. Such was the case. The underwriting managers, who wrote the policies that committed the premiums, were the most influential; the claims managers, who kept a lid on the funds flowing out, were a close second. Least influential were the managers of functions unrelated to revenue, such as mailroom and payroll managers. And contrary to what the administrative services manager believed, the third most powerful department head (out of 21) was the woman in charge of the coding function, which consisted of rating, recording, and keeping track of the codes of all policy applications and contracts. Her peers attributed more influence to her than could have been inferred from her place on the organization chart. And it was not surprising, since they all depended on her department. The coding department's records, their accuracy and the speed with which they could be retrieved, affected virtually every other operating department in the insurance office. The underwriters depended on them in getting the contracts straight; the typing department depended on them in preparing the formal contract document; the claims department depended on them in adjusting claims; and accounting depended on them for billing. Unfortunately, the "bosses" were not aware of these dependences, for unlike the cigarette factory, there were no massive breakdowns that made them obvious, while the coding manager, who was a hard-working but quiet person, did little to announce her importance.

The cases of this plant and office illustrate nicely a basic point about the source of power in organizations. The basis for power in an organization derives from the ability of a person or subunit to take or not take actions that are desired by others. The coding manager was seen as influential by those who depended on her department, but not by the people at the top. The engineers were influential because of their role in keeping the plant operating. The two cases differ in these respects: The coding supervisor's source of power was not as widely recognized as that of the maintenance engineers, and she did not use her source of power to influence decisions; the maintenance engineers did. Whether power is used to influence anything is a separate issue. We should not confuse this issue with the fact that power derives from a social situation in which one person has a capacity to do something and another person does not, but wants it done.

Power sharing in organizations

Power is shared in organizations; and it is shared out of necessity more than out of concern for principles of organizational development or participatory democracy. Power is shared because no one person controls all the desired activities in the organization. While the factory owner may hire people to operate his noisy machines, once hired they have some control over the use of the machinery. And thus they have power over him in the same way he has power over them. Who has more power over whom is a mooter point than that of recognizing the inherent nature of organizing as a sharing of power.

Let's expand on the concept that power derives from the activities desired in an organization. A major way of managing influence in organizations is through the designation of activities. In a bank we studied, we saw this principle in action. This bank was planning to install a computer system for routine credit evaluation. The bank, rather progressive-minded, was concerned that the change would have adverse effects on employees and therefore surveyed their attitudes.

The principal opposition to the new system came, interestingly, not from the employees who performed the routine credit checks, some of whom would be relocated because of the change, but from the manager of the credit department. His reason was quite simple. The manager's primary function was to give official approval to the applications, catch any employee mistakes before giving approval, and arbitrate any difficulties the clerks had in deciding what to do. As a consequence of his role, others in the organization, including his superiors, subordinates, and colleagues, attributed considerable importance to him. He, in turn, for example, could point to the low proportion of

credit approvals, compared with other financial institutions, that resulted in bad debts. Now, to his mind, a wretched machine threatened to transfer his role to a computer programmer, a man who knew nothing of finance and who, in addition, had ten years less seniority. The credit manager eventually quit for a position at a smaller firm with lower pay, but one in which he would have more influence than his redefined job would have left him with.

Because power derives from activities rather than individuals, an individual's or subgroup's power is never absolute and derives ultimately from the context of the situation. The amount of power an individual has at any one time depends, not only on the activities he or she controls, but also on the existence of other persons or means by which the activities can be achieved and on those who determine what ends are desired and, hence, on what activities are desired and critical for the organization. One's own power always depends on other people for these two reasons. Other people, or groups or organizations, can determine the definition of what is a critical contingency for the organization and can also undercut the uniqueness of the individual's personal contribution to the critical contingencies of the organization.

Perhaps one can best appreciate how situationally dependent power is by examining how it is distributed. In most societies, power organizes around scarce and critical resources. Rarely does power organize around abundant resources. In the United States, a person doesn't become powerful because he or she can drive a car. There are simply too many others who can drive with equal facility. In certain villages in Mexico, on the other hand, a person with a car is accredited with enormous social status and plays a key role in the community. In addition to scarcity, power is also limited by the need for one's capacities in a social system. While a racer's ability to drive a car around a 90° turn at 80 mph may be sparsely distributed in a society, it is not likely to lend the driver much power in the society. The ability simply does not play a central role in the activities of the society.

The fact that power revolves around scarce and critical activities, of course, makes the control and organization of those activities a major battleground in struggles for power. Even relatively abundant or trivial resources can become the bases for power if one can organize and control their allocation and the definition of what is critical. Many occupational and professional groups attempt to do just this in modern economies. Lawyers organize themselves into associations, regulate the entrance requirements for novitiates, and then get laws passed specifying situations that require the services of an attorney. Workers had little power in the conduct of industrial affairs until they organized

themselves into closed and controlled systems. In recent years, women and blacks have tried to define themselves as important and critical to the social system, using law to reify their status.

In organizations there are obviously opportunities for defining certain activities as more critical than others. Indeed, the growth of managerial thinking to include defining organizational objectives and goals has done much to foster these opportunities. One sure way to liquidate the power of groups in the organization is to define the need for their services out of existence. David Halberstam presents a description of how just such a thing happened to the group of correspondents that evolved around Edward R. Murrow, the brilliant journalist, interviewer, and war correspondent of CBS News. A close friend of CBS chairman and controlling stockholder William S. Paley, Murrow, and the news department he directed, were endowed with freedom to do what they felt was right. He used it to create some of the best documentaries and commentaries ever seen on television. Unfortunately, television became too large, too powerful, and too suspect in the eyes of the federal government that licensed it. It thus became, or at least the top executives believed it had become, too dangerous to have in-depth, probing commentary on the news. Crisp, dry uneditorializing headlines were considered safer. Murrow was out and Walter Cronkite was in.

The power to define what is critical in an organization is no small power. Moreover, it is the key to understanding why organizations are either aligned with their environments or misaligned. If an organization defines certain activities as critical when in fact they are not critical, given the flow of resources coming into the organization, it is not likely to survive, at least in its present form.

Most organizations manage to evolve a distribution of power and influence that is aligned with the critical realities they face in the environment. The environment, in turn, includes both the internal environment, the shifting situational contexts in which particular decisions get made, and the external environment that it can hope to influence but is unlikely to control.

The critical contingencies

The critical contingencies facing most organizations derive from the environmental context within which they operate. This determines the available needed resources and thus determines the problems to be dealt with. That power organizes around handling these problems suggests an important mechanism by which organizations keep in tune with their external environments. The strategic-contingencies model implies that subunits that contribute to the critical resources of the

organization will gain influence in the organization. Their influence presumably is then used to bend the organization's activities to the contingencies that determine its resources. This idea may strike one as obvious. But its obviousness in no way diminishes its importance. Indeed, despite its obviousness, it escapes the notice of many organizational analysts and managers, who all too frequently think of the organization in terms of a descending pyramid, in which all the departments in one tier hold equal power and status. This presumption denies the reality that departments differ in the contributions they are believed to make to the overall organization's resources, as well as to the fact that some are more equal than others.

Because of the importance of this idea to organizational effectiveness, we decided to examine it carefully in a large midwestern university. A university offers an excellent site for studying power. It is composed of departments with nominally equal power and is administered by a central executive structure much like other bureaucracies. However, at the same time is is a situation in which the departments have clearly defined identities and face diverse external environments. Each department has its own bodies of knowledge, its own institutions, its own sources of prestige and resources. Because the departments operate in different external environments, they are likely to contribute differentially to the resources of the overall organization. Thus a physics department with close ties to NASA may contribute substantially to the funds of the university; and a history department with a renowned historian in residence may contribute to the intellectual credibility or prestige of the whole university. Such variations permit one to examine how these various contributions lead to obtaining power within the university.

We analyzed the influence of 29 university departments throughout an 18-month period in their history. Our chief interest was to determine whether departments that brought more critical resources to the university would be more powerful than departments that contributed fewer or less critical resources.

To identify the critical resources each department contributed, the heads of all departments were interviewed about the importance of seven different resources to the university's success. The seven included undergraduate students (the factor determining size of the state allocations by the university), national prestige, administrative expertise, and so on. The most critical resource was found to be contract and grant monies received by a department's faculty for research or consulting services. At this university, contract and grants contributed somewhat less than 50 percent of the overall budget, with the remainder primarily coming from state appropriations. The importance at-

tributed to contract and grant monies, and the rather minor importance of undergraduate students, was not surprising for this particular university. The university was a major center for graduate education; many of its departments ranked in the top ten of their respective fields. Grant and contract monies were the primary source of discretionary funding available for maintaining these programs of graduate education, and hence for maintaining the university's prestige. The prestige of the university itself was critical both in recruiting able students and attracting top-notch faculty.

From university records it was determined what relative contributions each of the 29 departments made to the various needs of the university (national prestige, outside grants, teaching). Thus, for instance, one department may have contributed to the university by teaching 7 percent of the instructional units, bringing in 2 percent of the outside contracts and grants, and having a national ranking of 20. Another department, on the other hand, may have taught 1 percent of the instructional units, contributed 12 percent to the grants, and be ranked the third best department in its field within the country.

The question was: Do these different contributions determine the relative power of the departments within the university? Power was measured in several ways; but regardless of how measured, the answer was Yes. Those three resources together accounted for about 70 percent of the variance in subunit power in the university.

But the most important predictor of departmental power was the department's contribution to the contracts and grants of the university. Sixty percent of the variance in power was due to this one factor, suggesting that the power of departments derived primarily from the dollars they provided for graduate education, the activity believed to be the most important for the organization.

The impact of organizational power on decision making

The measure of power we used in studying this university was an analysis of the responses of the department heads we interviewed. While such perceptions of power might be of interest in their own right, they contribute little to our understanding of how the distribution of power might serve to align an organization with its critical realities. For this we must look to how power actually influences the decisions and policies of organizations.

While it is perhaps not absolutely valid, we can generally gauge the relative importance of a department of an organization by the size of the budget allocated to it relative to other departments. Clearly it is of importance to the administrators of those departments whether they get squeezed in a budget crunch or are given more funds to strike out

after new opportunities. And it should also be clear that when those decisions are made and one department can go ahead and try new approaches while another must cut back on the old, then the deployment of the resources of the organization in meeting its problem is most directly affected.

Thus our study of the university led us to ask the following question: Does power lead to influence in the organization? To answer this question, we found it useful first to ask another one, namely: Why should department heads try to influence organizational decisions to favor their own departments to the exclusion of other departments? While this second question may seem a bit naive to anyone who has witnessed the political realities of organizations, we posed it in a context of research on organizations that sees power as an illegitimate threat to the neater rational authority of modern bureaucracies. In this context, decisions are not believed to be made because of the dirty business of politics but because of the overall goals and purposes of the organization. In a university, one reasonable basis for decision making is the teaching workload of departments and the demands that follow from that workload. We would expect, therefore, that departments with heavy student demands for courses would be able to obtain funds for teaching. Another reasonable basis for decision making is quality. We would expect, for that reason, that departments with esteemed reputations would be able to obtain funds both because their quality suggests they might use such funds effectively and because such funds would allow them to maintain their quality. A rational model of bureaucracy intimates, then, that the organizational decisions taken would favor those who perform the stated purposes of the organization—teaching undergraduates and training professional and scientific talent—well.

The problem with rational models of decision making, however, is that what is rational to one person may strike another as irrational. For most departments, resources are a question of survival. While teaching undergraduates may seem to be a major goal for some members of the university, developing knowledge may seem so to others; and to still others, advising governments and other institutions about policies may seem to be the crucial business. Everyone has his own idea of the proper priorities in a just world. Thus goals rather than being clearly defined and universally agreed upon are blurred and contested throughout the organization. If such is the case, then the decisions taken on behalf of the organization as a whole are likely to reflect the goals of those who prevail in political contests, namely, those with power in the organization.

Will organizational decisions always reflect the distribution of power

in the organization? Probably not. Using power for influence requires a certain expenditure of effort, time, and resources. Prudent and judicious persons are not likely to use their power needlessly or wastefully. And it is likely that power will be used to influence organizational decisions primarily under circumstances that both require and favor its use. We have examined three conditions that are likely to affect the use of power in organizations: scarcity, criticality, and uncertainty. The first suggests that subunits will try to exert influence when the resources of the organization are scarce. If there is an abundance of resources, then a particular department or a particular individual has little need to attempt influence. With little effort, he can get all he wants anyway.

The second condition, criticality, suggests that a subunit will attempt to influence decisions to obtain resources that are critical to its own survival and activities. Criticality implies that one would not waste effort, or risk being labeled obstinate, by fighting over trivial decisions affecting one's operations.

An office manager would probably balk less about a threatened cutback in copying machine usage than about a reduction in typing staff. An advertising department head would probably worry less about losing his lettering artist than his illustrator. Criticality is difficult to define because what is critical depends on people's beliefs about what is critical. Such beliefs may or may not be based on experience and knowledge and may or may not be agreed upon by all. Scarcity, for instance, may itself affect conceptions of criticality. When slack resources drop off, cutbacks have to be made—those “hard decisions,” as congressmen and resplendent administrators like to call them. Managers then find themselves scrapping projects they once held dear.

The third condition that we believe affects the use of power is uncertainty: When individuals do not agree about what the organization should do or how to do it, power and other social processes will affect decisions. The reason for this is simply that, if there are no clear-cut criteria available for resolving conflicts of interest, then the only means for resolution is some form of social process, including power, status, social ties, or some arbitrary process like flipping a coin or drawing straws. Under conditions of uncertainty, the powerful manager can argue his case on any grounds and usually win it. Since there is no real consensus, other contestants are not likely to develop counter arguments or amass sufficient opposition. Moreover, because of his power and their need for access to the resources he controls, they are more likely to defer to his arguments.

Although the evidence is slight, we have found that power will influence the allocations of scarce and critical resources. In the analysis of

power in the university, for instance, one of the most critical resources needed by departments is the general budget. First granted by the state legislature, the general budget is later allocated to individual departments by the university administration in response to requests from the department heads. Our analysis of the factors that contribute to a department getting more or less of this budget indicated that subunit power was the major predictor, overriding such factors as student demand for courses, national reputations of departments, or even the size of a department's faculty. Moreover, other research has shown that when the general budget has been cut back or held below previous uninflated levels, leading to monies becoming more scarce, budget allocations mirror departmental powers even more closely.

Student enrollment and faculty size, of course, do themselves relate to budget allocations, as we would expect since they determine a department's need for resources, or at least offer visible testimony of needs. But departments are not always able to get what they need by the mere fact of needing. In one analysis it was found that high-power departments were able to obtain budget without regard to their teaching loads and, in some cases, actually in inverse relation to their teaching loads. In contrast, low-power departments could get increases in budget only when they could justify the increases by a recent growth in teaching load, and then only when it was far in excess of norms for other departments.

General budget is only one form of resource that is allocated to departments. There are others such as special grants for student fellowships or faculty research. These are critical to departments because they affect the ability to attract other resources, such as outstanding faculty or students. We examined how power influenced the allocations of four resources department heads had described as critical and scarce.

When the four resources were arrayed from the most to the least critical and scarce, we found that departmental power best predicted the allocations of the most critical and scarce resources. In other words, the analysis of how power influences organizational allocations leads to this conclusion: Those subunits most likely to survive in times of strife are those that are most critical to the organization. Their importance to the organization gives them power to influence resource allocations that enhance their own survival.

How external environment influences executive selection

Power not only influences the survival of key groups in an organization, it also influences the selection of individuals to key leadership

positions, and by such a process further aligns the organization with its environmental context.

We can illustrate this with a recent study of the selection and tenure of chief administrators in 57 hospitals in Illinois. We assumed that since the critical problems facing the organization would enhance the power of certain groups at the expense of others, then the leaders to emerge should be those most relevant to the context of the hospitals. To assess this we asked each chief administrator about his professional background and how long he had been in office. The replies were then related to the hospital's funding, ownership, and competitive conditions for patients and staff.

One aspect of a hospital's context is the source of its budget. Some hospitals, for instance, are run much like other businesses. They sell bed space, patient care, and treatment services. They charge fees sufficient both to cover their costs and to provide capital for expansion. The main source of both their operating and capital funds is patient billings. Increasingly, patient billings are paid for, not by patients, but by private insurance companies. Insurers like Blue Cross dominate and represent a potent interest group outside a hospital's control but critical to its income. The insurance companies, in order to limit their own costs, attempt to hold down the fees allowable to hospitals, which they do effectively from their positions on state rate boards. The squeeze on hospitals that results from fees increasing slowly while costs climb rapidly more and more demands the talents of cost accountants or people trained in the technical expertise of hospital administration.

By contrast, other hospitals operate more like social service institutions, either as government health-care units (Bellevue Hospital in New York City and Cook County Hospital in Chicago, for example) or as charitable institutions. These hospitals obtain a large proportion of their operating and capital funds, not from privately insured patients, but from government subsidies or private donations. Such institutions rather than requiring the talents of a technically efficient administrator are likely to require the savvy of someone who is well integrated into the social and political power structure of the community.

Not surprisingly, the characteristics of administrators predictably reflect the funding context of the hospitals with which they are associated. Those hospitals with larger proportions of their budget obtained from private insurance companies were most likely to have administrators with backgrounds in accounting and least likely to have administrators whose professions were business or medicine. In contrast,

those hospitals with larger proportions of their budget derived from private donations and local governments were most likely to have administrators with business or professional backgrounds and least likely to have accountants. The same held for formal training in hospital management. Professional hospital administrators could easily be found in hospitals drawing their incomes from private insurance and rarely in hospitals dependent on donations or legislative appropriations.

As with the selection of administrators, the context of organizations has also been found to affect the removal of executives. The environment, as a source of organizational problems, can make it more or less difficult for executives to demonstrate their value to the organization. In the hospitals we studied, long-term administrators came from hospitals with few problems. They enjoyed amicable and stable relations with their local business and social communities and suffered little competition for funding and staff. The small city hospital director who attended civic and Elks meetings while running the only hospital within a 100-mile radius, for example, had little difficulty holding on to his job. Turnover was highest in hospitals with the most problems, a phenomenon similar to that observed in a study of industrial organizations in which turnover was highest among executives in industries with competitive environments and unstable market conditions. The interesting thing is that instability characterized the industries rather than the individual firms in them. The troublesome conditions in the individual firms were attributed, or rather misattributed, to the executives themselves.

It takes more than problems, however, to terminate a manager's leadership. The problems themselves must be relevant and critical. This is clear from the way in which an administrator's tenure is affected by the status of the hospital's operating budget. Naively we might assume that all administrators would need to show a surplus. Not necessarily so. Again, we must distinguish between those hospitals that depend on private donations for funds and those that do not. Whether an endowed budget shows a surplus or deficit is less important than the hospital's relations with benefactors. On the other hand, with a budget dependent on patient billing, a surplus is almost essential; monies for new equipment or expansion must be drawn from it, and without them quality care becomes more difficult and patients scarcer. An administrator's tenure reflected just these considerations. For those hospitals dependent upon private donations, the length of an administrator's term depended not at all on the status of the operating budget but was fairly predictable from the hospital's relations with the business

community. On the other hand, in hospitals dependent on the operating budget for capital financing, the greater the deficit the shorter was the tenure of the hospital's principal administrators.

Changing contingencies and eroding power bases

The critical contingencies facing the organization may change. When they do, it is reasonable to expect that the power of individuals and subgroups will change in turn. At times the shift can be swift and shattering, as it was recently for powerholders in New York City. A few years ago it was believed that David Rockefeller was one of the ten most powerful people in the city, as tallied by *New York* magazine, which annually sniffs out power for the delectation of its readers. But that was before it was revealed that the city was in financial trouble, before Rockefeller's Chase Manhattan Bank lost some of its own financial luster, and before brother Nelson lost some of his political influence in Washington. Obviously David Rockefeller was no longer as well positioned to help bail the city out. Another loser was an attorney with considerable personal connections to the political and religious leaders of the city. His talents were no longer in much demand. The persons with more influence were the bankers and union pension fund executors who fed money to the city; community leaders who represent blacks and Spanish-Americans, in contrast, witnessed the erosion of their power bases.

One implication of the idea that power shifts with changes in organizational environments is that the dominant coalition will tend to be that group that is most appropriate for the organization's environment, as also will the leaders of an organization. One can observe this historically in the top executives of industrial firms in the United States. Up until the early 1950s, many top corporations were headed by former production line managers or engineers who gained prominence because of their abilities to cope with the problems of production. Their success, however, only spelled their demise. As production became routinized and mechanized, the problem of most firms became one of selling all those goods they so efficiently produced. Marketing executives were more frequently found in corporate boardrooms. Success outdid itself again, for keeping markets and production steady and stable requires the kind of control that can only come from acquiring competitors and suppliers or the invention of more and more appealing products—ventures that typically require enormous amounts of capital. During the 1960s, financial executives assumed the seats of power. And they, too, will give way to others. Edging over the horizon are legal experts, as regulation and antitrust suits are becoming more and more frequent in the 1970s, suits that had their beginnings in the

success of the expansion generated by prior executives. The more distant future, which is likely to be dominated by multinational corporations, may see former secretaries of state and their minions increasingly serving as corporate figureheads.

The nonadaptive consequences of adaptation

From what we have said thus far about power aligning the organization with its own realities, an intelligent person might react with a resounding ho-hum, for it all seems too obvious: Those with the ability to get the job done are given the job to do.

However, there are two aspects of power that make it more useful for understanding organizations and their effectiveness. First, the "job" to be done has a way of expanding itself until it becomes less and less clear what the job is. Napoleon began by doing a job for France in the war with Austria and ended up emperor, convincing many that only he could keep the peace. Hitler began by promising an end to Germany's troubling postwar depression and ended up convincing more people than is comfortable to remember that he was destined to be the savior of the world. In short, power is a capacity for influence that extends far beyond the original bases that created it. Second, power tends to take on institutionalized forms that enable it to endure well beyond its usefulness to an organization.

There is an important contradiction in what we have observed about organizational power. On the one hand we have said that power derives from the contingencies facing an organization and that when those contingencies change so do the bases for power. On the other hand we have asserted that subunits will tend to use their power to influence organizational decisions in their own favor, particularly when their own survival is threatened by the scarcity of critical resources. The first statement implies that an organization will tend to be aligned with its environment since power will tend to bring to key positions those with capabilities relevant to the context. The second implies that those in power will not give up their positions so easily; they will pursue policies that guarantee their continued domination. In short, change and stability operate through the same mechanism, and, as a result, the organization will never be completely in phase with its environment or its needs.

The study of hospital administrators illustrates how leadership can be out of phase with reality. We argued that privately funded hospitals needed trained technical administrators more so than did hospitals funded by donations. The need as we perceived it was matched in most hospitals, but by no means in all. Some organizations did not conform with our predictions. These deviations imply that some administrators

were able to maintain their positions independent of their suitability for those positions. By dividing administrators into those with long and short terms of office, one finds that the characteristics of longer-termed administrators were virtually unrelated to the hospital's context. The shorter-termed chiefs, on the other hand, had characteristics more appropriate for the hospital's problems. For a hospital to have a recently appointed head implies that the previous administrator had been unable to endure by institutionalizing himself.

One obvious feature of hospitals that allowed some administrators to enjoy a long tenure was a hospital's ownership. Administrators were less entrenched when their hospitals were affiliated with and dependent upon larger organizations, such as governments or churches. Private hospitals offered more secure positions for administrators. Like private corporations, they tend to have more diffused ownership, leaving the administrator unopposed as he institutionalizes his reign. Thus he endures, sometimes at the expense of the performance of the organization. Other research has demonstrated that corporations with diffuse ownership have poorer earnings than those in which the control of the manager is checked by a dominant shareholder. Firms that overload their board-rooms with more insiders than are appropriate for their context have also been found to be less profitable.

A word of caution is required about our judgment of "appropriateness." When we argue some capabilities are more appropriate for one context than another, we do so from the perspective of an outsider and on the basis of reasonable assumptions as to the problems the organization will face and the capabilities they will need. The fact that we have been able to predict the distribution of influence and the characteristics of leaders suggests that our reasoning is not incorrect. However, we do not think that all organizations follow the same pattern. The fact that we have not been able to predict outcomes with 100 percent accuracy indicates they do not.

Mistaking critical contingencies

One thing that allows subunits to retain their power is their ability to name their functions as critical to the organization when they may not be. Consider again our discussion of power in the university. One might wonder why the most critical tasks were defined as graduate education and scholarly research, the effect of which was to lend power to those who brought in grants and contracts. Why not something else? The reason is that the most powerful departments argued for those criteria and won their case, partly because they were more powerful.

In another analysis of this university, we found that all departments

advocate self-serving criteria for budget allocation. Thus a department with large undergraduate enrollments argued that enrollments should determine budget allocations, a department with a strong national reputation saw prestige as the most reasonable basis for distributing funds, and so on. We further found that advocating such self-serving criteria actually benefited a department's budget allotments but, also, it paid off more for departments that were already powerful.

Organizational needs are consistent with a current distribution of power also because of a human tendency to categorize problems in familiar ways. An accountant sees problems with organizational performance as cost accountancy problems or inventory flow problems. A sales manager sees them as problems with markets, promotional strategies, or just unaggressive salespeople. But what is the truth? Since it does not automatically announce itself, it is likely that those with prior credibility, or those with power, will be favored as the enlightened. This bias, while not intentionally self-serving, further concentrates power among those who already possess it, independent of changes in the organization's context.

Institutionalizing power

A third reason for expecting organizational contingencies to be defined in familiar ways is that the current holders of power can structure the organization in ways that institutionalize themselves. By institutionalization we mean the establishment of relatively permanent structures and policies that favor the influence of a particular subunit. While in power, a dominant coalition has the ability to institute constitutions, rules, procedures, and information systems that limit the potential power of others while continuing their own.

The key to institutionalizing power always is to create a device that legitimates one's own authority and diminishes the legitimacy of others. When the "Divine Right of Kings" was envisioned centuries ago it was to provide an unquestionable foundation for the supremacy of royal authority. There is generally a need to root the exercise of authority in some higher power. Modern leaders are no less affected by this need. Richard Nixon, with the aid of John Dean, reified the concept of executive privilege, which meant in effect that what the president wished not to be discussed need not be discussed.

In its simpler form, institutionalization is achieved by designating positions or roles for organizational activities. The creation of a new post legitimizes a function and forces organization members to orient to it. By designating how this new post relates to older, more established posts, moreover, one can structure an organization to enhance the importance of the function in the organization. Equally, one can

diminish the importance of traditional functions. This is what happened in the end with the insurance company we mentioned that was having trouble with its coding department. As the situation unfolded, the claims director continued to feel dissatisfied about the dependency of his functions on the coding manager. Thus he instituted a reorganization that resulted in two coding departments. In so doing, of course, he placed activities that affected his department under his direct control, presumably to make the operation more effective. Similarly, consumer-product firms enhance the power of marketing by setting up a coordinating role to interface production and marketing functions and then appoint a marketing manager to fill the role.

The structures created by dominant powers sooner or later become fixed and unquestioned features of the organization. Eventually, this can be devastating. It is said that the battle of Jena in 1806 was lost by Frederick the Great, who died in 1786. Though the great Prussian leader had no direct hand in the disaster, his imprint on the army was so thorough, so embedded in its skeletal underpinnings, that the organization was inappropriate for others to lead in different times.

Another important source of institutionalized power lies in the ability to structure information systems. Setting up committees to investigate particular organizational issues and having them report only to particular individuals or groups facilitates their awareness of problems by members of those groups while limiting the awareness of problems by the members of other groups. Obviously, those who have information are in a better position to interpret the problems of an organization, regardless of how realistically they may, in fact, do so.

Still another way to institutionalize power is to distribute rewards and resources. The dominant group may quiet competing interest groups with small favors and rewards. The credit for this artful form of cooptation belongs to Louis XIV. To avoid usurpation of his power by the nobles of France and the Fronde that had so troubled his father's reign, he built the palace at Versailles to occupy them with hunting and gossip. Awed, the courtiers basked in the reflected glories of the "Sun King" and the overwhelming setting he had created for his court.

At this point, we have not systematically studied the institutionalization of power. But we suspect it is an important condition that mediates between the environment of the organization and the capabilities of the organization for dealing with that environment. The more institutionalized power is within an organization, the more likely an organization will be out of phase with the realities it faces. President Richard Nixon's structuring of his White House is one of the better documented illustrations. If we go back to newspaper and magazine descriptions of

how he organized his office from the beginning in 1968, most of what occurred subsequently follows almost as an afterthought. Decisions — flowed through virtually only the small White House staff; rewards, small presidential favors of recognition, and perquisites were distributed by this staff to the loyal; and information from the outside world — the press, Congress, the people on the streets — was filtered by the staff and passed along only if initialed "bh." Thus it was not surprising that when Nixon met war protestors in the early dawn, the only thing he could think to talk about was the latest football game, so insulated had he become from their grief and anger.

One of the more interesting implications of institutionalized power is that executive turnover among the executives who have structured the organization is likely to be a rare event that occurs only under the most pressing crisis. If a dominant coalition is able to structure the organization and interpret the meaning of ambiguous events like declining sales and profits or lawsuits, then the "real" problems to emerge will easily be incorporated into traditional modes of thinking and acting. If opposition is designed out of the organization, the interpretations will go unquestioned. Conditions will remain stable until a crisis develops, so overwhelming and visible that even the most adroit rhetorician would be silenced.

Implications for the management of power in organizations

While we could derive numerous implications from this discussion of power, our selection would have to depend largely on whether one wanted to increase one's power, decrease the power of others, or merely maintain one's position. More important, the real implications depend on the particulars of an organizational situation. To understand power in an organization one must begin by looking outside it — into the environment — for those groups that mediate the organization's outcomes but are not themselves within its control.

Instead of ending with homilies, we will end with a reversal of where we began. Power, rather than being the dirty business it is often made out to be, is probably one of the few mechanisms for reality testing in organizations. And the cleaner forms of power, the institutional forms, rather than having the virtues they are often credited with, can lead the organization to become out of touch. The real trick to managing power in organizations is to ensure somehow that leaders cannot be unaware of the realities of their environments and cannot avoid changing to deal with those realities. That, however, would be like designing the "self-liquidating organization," an unlikely event since anyone capable of designing such an instrument would be obviously in control of the liquidations.

Management would do well to devote more attention to determining the critical contingencies of their environments. For if you conclude, as we do, that the environment sets most of the structure influencing organizational outcomes and problems, and that power derives from the organization's activities that deal with those contingencies, then it is the environment that needs managing, not power. The first step is to construct an accurate model of the environment, a process that is quite difficult for most organizations. We have recently started a project to aid administrators in systematically understanding their environments. From this experience, we have learned that the most critical blockage to perceiving an organization's reality accurately is a failure to incorporate those with the relevant expertise into the process. Most organizations have the requisite experts on hand but they are positioned so that they can be comfortably ignored.

One conclusion you can, and probably should, derive from our discussion is that power—because of the way it develops and the way it is used—will always result in the organization suboptimizing its performance. However, to this grim absolute, we add a comforting caveat: If any criteria other than power were the basis for determining an organization's decisions, the results would be even worse.

Selected bibliography

The literature on power is at once both voluminous and frequently empty of content. Some is philosophical musing about the concept of power, while other writing contains popularized palliatives for acquiring and exercising influence. Machiavelli's *The Prince*, if read carefully, remains the single best prescriptive treatment of power and its use. Most social scientists have approached power descriptively, attempting to understand how it is acquired, how it is used, and what its effects are. Mayer Zald's edited collection *Power in Organizations* (Vanderbilt University Press, 1970), is one of the more useful sets of thoughts about power from a sociological perspective, while James Tedeschi's edited book, *The Social Influence Processes* (Aldine-Atherton, 1972) represents the social psychological approach to understanding power and influence. The strategic contingencies approach, with its emphasis on the importance of uncertainty for understanding power in organizations, is described by David Hickson and his colleagues in "A Strategic Contingencies Theory of Intraorganizational Power" (*Administrative Science Quarterly*, December 1971, pp. 216-229).

Unfortunately, while many have written about power theoretically, there have been few empirical examinations of power and its use. Most of the work has taken the form of case studies. Michel Crozier's

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The Bureaucratic Phenomenon (University of Chicago Press, 1964) is important because it describes a group's source of power as control over critical activities and illustrates how power is not strictly derived from hierarchical position. J. Victor Baldridge's *Power and Conflict in the University* (John Wiley & Sons, 1971) and Andrew Pettigrew's study of computer purchase decisions in one English firm (*Politics of Organizational Decision-Making*, Tavistock, 1973) both present insights into the acquisition and use of power in specific instances. Our work has been more empirical and comparative, testing more explicitly the ideas presented in this article. The study of university decision making is reported in articles in the June 1974, pp. 135–151, and December 1974, pp. 453–473, issues of the *Administrative Science Quarterly*, the insurance firm study in J. G. Hunt and L. L. Larson's collection, *Leadership Frontiers* (Kent State University Press, 1975), and the study of hospital administrator succession appears in 1977 in the *Academy of Management Journal*.



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STANFORD UNIVERSITY
MANAGEMENT

John Smithers at Sigtek

It was a few days before Christmas, and a light snow had covered the New England town where John Smithers lived with his wife and two young children. But instead of planning surprises and wrapping presents, Smithers was working on his resume. He had already warned his wife that within weeks he expected to be fired by Sigtek, his employer of three years. His boss and mentor had just been demoted to what appeared to be an extraneous position. He figured it was just a matter of time until his job was taken, too.

Eight months earlier, things had looked very different. Smithers's boss, Andrew Cross, had selected him for what appeared to be a challenging and potentially rewarding opportunity: to become one of two site instructors for a Total Quality program soon to be launched at Sigtek, the small telecommunications company where he worked. Not only was Smithers excited at the chance to apply some of the management tenets he believed in so fervently, he also felt that this program could be the key to setting Sigtek on a path toward much needed change.

Founded 25 years earlier by three Western Electric veterans, Sigtek manufactured printed circuit boards for signal handling which it sold primarily to AT&T and other long-distance carriers. Sigtek was bought 10 years ago by a large technology company which had maintained a hands-off management style, and left Sigtek to its own devices. Sigtek was relatively small and it had faced few competitors in its niche. The company had grown steadily, particularly following the breakup of AT&T and the subsequent opening up of the long-distance market to other competitors. With the telecommunications industry in turmoil, both the carriers and the suppliers that served them had stockpiled products, including the signal-handling equipment that Sigtek made. As a result, Sigtek's sales had shot up to more than \$60 million, its workforce topped 1,000, and prospects seemed very bright. Many within the company predicted that Sigtek would be a \$100 million company within five years.

Unfortunately, Sigtek's growth spurt was short-lived. Because of the earlier stockpiling, the industry's sales the following year were artificially depressed. Moreover, for the first time, Sigtek began to face serious competition in its marketplace. As the company's printed circuit boards became more of a commodity product, customers began to base their buying decisions less on quality and more on price and delivery time. Moreover, the company's first attempt to incorporate software into a computer system for signal handling was falling abysmally behind schedule. As a result, Sigtek's sales had tumbled to about \$40 million, and it had trimmed its workforce to 800.

Other changes were in the air. Sigtek had been bought by another company a year earlier. But unlike its former corporate parent, its new owner, Telwork, a \$500 million European

Research Associate Susan Rosegrant prepared this case under the supervision of Professor Todd Jick as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. It was revised by Professor John Gabarro.

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telecommunications company, made it clear that it planned to influence how its new subsidiary operated. In November of that year, Telwork began formulating a Total Quality program, based on a highly acclaimed model, which it intended to bring to all its subsidiaries. The goal of the program was not only to improve product quality and encourage better management practices, but also to gather all of the scattered and diverse companies which Telwork had acquired under a single corporate umbrella. By April, Telwork was ready to begin training instructors from each of its subsidiaries in the Total Quality program.

Smithers Makes a Choice

Andrew Cross, Sigtek's vice president of engineering, asked Smithers to become one of two site instructors for the Total Quality program (see **Exhibit 1**). Smithers looked up to Cross as a mentor, and the two men had similar ideas about the best way to manage people. Although Sigtek's overall management style could be characterized as autocratic and largely unresponsive to worker concerns, both Smithers and Cross had been working within the engineering side of the business to encourage problem solving and open communication, and to enlist worker participation. Moreover, Smithers had already demonstrated an ability to identify problems within the engineering group and to come up with effective strategies for resolving them. Less than a year earlier, Cross had promoted Smithers to head up engineering services, the group responsible for doing product design work and documentation for manufacturing, and one of Sigtek's more troubled units.

As engineering services manager, Smithers had to redefine a haphazard design process, correct inadequate documentation, and cut the highest employee turnover rate in the company. Relying on several articles and books he had read, as well as his own managerial experience at a series of computer startups, Smithers set to work. First, he made several personnel changes, removing or reassigning a few managers who were particularly resistant to change. Next, he gathered group input on how to better define the design process, and then he designed and implemented a new computer integration strategy and reoriented the group to focus on customer-satisfaction goals. After just a few months, the results had already been impressive: the company's design process had become more responsive to customer needs; the designs themselves had fewer errors; the time it took to complete a design had been cut in half; and the employee attrition rate, which had been quite high, had dramatically declined. In addition, several of Smithers's peers remarked that he had an infectious enthusiasm which had made him a popular leader. Smithers believed that his easy, egalitarian manner had worked well with both his immediate peers and subordinates, as well as the typically middle-aged women who worked on the line assembling printed circuit boards.

In reflecting on why he was asked to be an instructor, Smithers believed that Cross was determined to get a strong engineering representative in the Total Quality program. Although many companies experienced a natural split between their engineering groups and the rest of their operations, Smithers felt that the separation was carried to an extreme at Sigtek. Indeed, Smithers believed that the corporate culture was best characterized by the extreme polarity which existed between the two sides of the organization: engineering and manufacturing operations. Sigtek's engineering staff was isolated in its own building, separated from the rest of the operations by a long hallway, and this physical separation seemed symbolic of the deep organizational gulf which divided the two sides.

This antipathy between engineering and operations had existed for many years. But Smithers thought that the current heads of the two groups—Cross, and his counterpart in operations, Richard Patricof—seemed particularly ill-matched. From Smithers's perspective, Cross appeared committed to bringing in new blood and new management practices, while Patricof seemed to lean more toward style and less toward substantive results. Smithers's perception was that Patricof rewarded those who parroted his beliefs and those who rarely questioned the status quo.

Since both Cross and Patricof were each responsible for selecting one instructor for the program, Cross had told Smithers that he needed to put one of his best managers forward for the job, and thus had nominated Smithers. Charles Bradley, Sigtek's largely absentee president and the last remaining member of its founding team, had chosen Patricof as Sigtek's representative on the Telwork corporate Quality Improvement Team. The Quality Improvement Team served as an advisory group for the Total Quality program and was made up of representatives from corporate headquarters and each of Telwork's subsidiaries. Cross told Smithers that this had already given Patricof an unfair opportunity to use the quality program for his own personal advancement. Cross felt that Smithers would bring some important balance to the process.

Smithers accepted the teaching post with some ambivalence. "When I first started, I said to him, 'I will do it if I don't have to lie,'" Smithers recalled. "'If I lie, I stop doing it.' I was skeptical about our ability to effect change."

A number of factors lay behind Smithers's uneasiness. For one thing he was afraid that a program of this sort might raise workers' expectations too high. He had seen evidence already of how resistant the Sigtek culture could be to change. In particular, he feared that the company's rift between engineering and manufacturing operations would present a formidable barrier to *any* change program which required that the entire organization rally and unite behind a single cause.

Moreover, although he had succeeded in attaining cooperation within his own engineering design department, Smithers had already experienced the frustrations of attempting to get this kind of cooperation on a companywide scale. Several months earlier, when working on upgrading the engineering design process, Smithers had tried to create a cross-functional team to identify ways in which his group could better serve and work with Sigtek's other operations. But the "team" concept had fizzled out when his peers from other areas had either come to meetings reluctantly, or simply did not bother to attend.

Smithers felt that another drawback of the teaching post was that he would be paired as an instructor with Sam Murphy from the operations side with whom he had already had several run-ins, and for whom he had very little respect and saw as a "fire fighter-type manager." "It was a joke," Smithers laughed. "It was like they were saying oil and water have been chosen to do this training together."

Despite these fears, Smithers had retained some of his enthusiasm. Secretly, he hoped that the quality program would prove to be the pivotal change which Sigtek needed. "I saw it as the last possible opportunity to alter the organization in a way that I had been trying to do in my own engineering services group," he explained. "I told my own people to just wait. If I can get this quality stuff going, we will all have a common battle cry."

In fact, Smithers was becoming increasingly convinced that unless Sigtek embraced some kind of change program, its days were numbered. He was certain that the antagonism between engineering and operations, which had flourished under the weak leadership of Bradley, was not only making it impossible for the organization to operate in an efficient and effective way, it was literally threatening to tear the organization in two. "There was one operations manager there who told me right before he resigned that he just wished the fight between Cross and Patricof would end," Smithers confided. "Then at least we would know who had won, and what to do."

The Process Begins

During May and June, Smithers and Murphy joined 10 other instructors from Telwork's other subsidiaries for three weeks of training, designed to familiarize them with the Total Quality materials and to teach them communication and presentation skills. The training was exciting; however, there were still reminders of the obstacles he faced. For example, Smithers and Murphy both tried to get

seats apart from each other when they flew to these off-site sessions. Still, Smithers felt encouraged by the caliber of the program. "I was impressed with the materials," he recalled. "Because I had been doing a lot of reading already, this incorporated most of the stuff I had figured out."

Specifically, the program focused on raising employee awareness of the following six Total Quality Goals:

1. to provide product and service quality better than all competitors;
2. to be the lowest-cost quality producer;
3. to relentlessly pursue quality improvement;
4. to manage through leadership;
5. to personally involve all employees through participative activity;
6. to be comprised of employees who approach the job fearlessly.

With these goals in place, the program literature promised, Telwork would be well on its way to becoming a market leader in the telecommunications industry.

These concepts were not new to Smithers. But apparently, they were new to Richard Patricof, Sigtek's representative to the corporate Quality Improvement Team, who had attended some of the same meetings. "When I came back from my first introduction to this stuff, Patricof said, 'Boy, that was great. You learn a lot of new stuff,'" Smithers recounted. "Because I had heard most of it before, I said, 'No, I didn't really learn a lot of new things, I learned some new terminology. And it was very exciting to learn the terminology that goes along with the management style I have been trying to practice.'"

Smithers and Murphy weren't scheduled to start training at Sigtek until September. In the meantime, Telwork sent a team of corporate trainers to Sigtek in July to present the Total Quality module to the company's senior and middle managers. Altogether, about 25 managers attended the 2-day, 16-hour program—the same program which Smithers and Murphy would later be presenting to the rest of the organization. "There were two purposes here," Smithers explained: "To help make our job as instructors easier, and to give management time to think about the magnitude of the change that would be happening after we started to give it to the ranks."

Smithers found the response to the program deeply disturbing. He still remembered the uneasy sensation that gripped him as the presentation to the managers had ended. "This was the first time our entire senior management had seen the program," he recalled, "and there were no questions during the entire presentation. What scared me the most was thinking that nobody cares. Or that nobody comprehends. Or that they are scared out of their boots." He added: "They had told us in class that when we presented the material, we would have (1) champions; (2) people we could convert; and (3) 'no-sales' (people we couldn't reach). What I realized as I looked around was that there were a couple of champions and possibly no converts."

Before starting the general training, Smithers and Murphy tried to lay the groundwork necessary to support the ambitious program they were about to present. They met with the site Quality Improvement Team, a cross-functional group of Sigtek managers largely hand-picked by Patricof, which was intended to serve as a sort of steering committee—establishing guidelines and in other ways helping to implement the Total Quality program. In addition, they struggled to pull together their presentations. During this time, the two instructors' mutual respect began to grow. Smithers realized that both of them were committed to the program, and they tried to put their differences aside for the good of the company.

But as the quality program took more and more time, Smithers found that his own department was starting to suffer from his frequent absences. There were personnel issues to resolve, for example. As his attention was pulled in two directions at once, both he and Murphy agreed that they needed an extra week to be ready for the September launch of the program. But when they asked Patricof, as the corporate quality representative, for a one-week extension, he turned them down. "I'm not even going to judge whether it was Patricof not wanting to wait," Smithers said, "or corporate telling him to get moving."

Total Quality Training Begins

With a little scrambling, Smithers and Murphy got the training underway. In September, they together presented three two-day classes to groups of about 25 employees who were usually all at the same hierarchical level. "According to me, what they were supposed to get out of this was a belief in a new system of management and a new work environment," Smithers said. "We laid out specific things that people could do, and things they should see happening."

Conducting these sessions revived some of Smithers' hope and optimism. For one thing, he liked the materials he was using. The format was not entirely rigid which allowed the instructors to emphasize the points they found most relevant. Moreover, the program's mix of workshops, videos, and other multimedia presentations was entertaining, both for the instructors and the audience. "I felt I had the tools I needed," Smithers mused. "I felt I could make the glaring deficiencies of the organization apparent to everybody."

But even better than that, Smithers felt that the line workers who attended the programs were buying into the Total Quality concept wholeheartedly. Smithers saw that employees were coming to the workshops with lists of examples of how things weren't working according to a Total Quality plan, and with ideas about how to fix them. "What was intriguing was the ability of the line workers to understand what we were talking about and the inability of most of those above them to understand," he exclaimed. "These were people who in some cases did not have a full high school education, but they picked it up in a snap. For them what it came down to was common sense and just treating people right." He added: "If I could have taken 95 percent of those line workers and gone off and started another company that day, in terms of problem solving, in terms of productivity, and in terms of motivation, we would have been in good shape."

The Unraveling Begins

It wasn't long, however, before Smithers' burst of optimism began to fade. Within weeks of the training kickoff, his original fear of being put in the position of "disseminating lies" began to weigh heavily on his mind. "I am pretty good at pumping up a crowd," he explained, "and I could see that with these tools and with my enthusiasm for it, the first thing you are going to do is heighten expectations way beyond reality. The workers would go back to their real world and not only would nothing be changed, they'd see that they *couldn't* change it."

In fact, Smithers claimed, this is exactly what began to happen. One of the "easily fixable" problems which a worker had submitted at one of the first quality workshops was the dilemma of the "bouncing boards." Specifically, the way the assembly process was set up, workers would place small components on a printed circuit board, stack the boards on carts, and then wheel them across the room to where other workers would solder the components in place. But because many of the carts had hard metal wheels, when they rolled across cracks in the floors, the boards would bounce and send the unsoldered components flying like pieces of popcorn.

This was just the sort of manageable problem Smithers wanted to attack. He led the workshop participants in finding acceptable solutions—either to have the maintenance people build new carts out of spare parts, or to order new ones with soft rubber wheels—and encouraged them to

take the ideas back to the floor supervisors for action. But the problem didn't go away. "Three or four weeks would go by and I'd have a new class," Smithers recounted. "I'd say, 'Give me an example of something that can be fixed,' and they'd say, 'Bouncing boards!' I was incredulous." He added: "At some point, the people coming in knew it had been a topic in the past, and I was losing credibility."

Smithers finally asked Murphy to look into the situation, since it was on the operations side of the business, just as new carts arrived. Although the problem was eventually resolved, Smithers never forgave the damage done to his own credibility by the long waiting period. "Patricof was always telling us to get known wins—to go for the easy wins," he grumbled. "Yet this was the simplest problem, and it wasn't getting fixed. I didn't see it as a success, because I saw the bureaucratic structure and the value system behind it all." He added: "Management just had this attitude like, 'I'm working on problems that are more serious than the components bouncing out of the boards.'"

Smithers also found several other incidents disturbing. One woman in an early workshop complained that for years she had been banging her knee on a metal plug receptacle which stuck out from the wall under her particular work station. After coaching her in how to raise this issue at her group's weekly quality meeting, the woman left happy. But when Smithers went out on the floor the following week to touch bases with the workshop participants, he recalled the woman hissed at him, "John Smithers, you speak with a forked tongue." Not only had she been unable to air her complaint with her floor supervisor, the woman also reported that the supervisor had peremptorily declared that she had no time and no budget for weekly meetings.

Smithers, unable to resolve the matter with either the supervisor or her boss, finally appealed to accounting, determined that the meeting—a supposed "corporate mandate" of the quality program—would take place. "I went over to accounting and I said, 'I want to charge an hour meeting to my group because that group over in operations can't pay for it, and those people are going to have a meeting!'" he recounted. "The person in accounting liked me, and she understood what I was trying to do, but she told me she could not do it that way." He added: "It must have taken a month for that meeting to happen, and another month for that socket to get fixed. That was a success, but look at the effort."

As a result of such incidents, Smithers doubted whether any of the company's senior managers (including Patricof, Sigtek's quality liaison to corporate), were committed to the changes they were preaching. Although the training manual stressed the importance of encouraging worker participation and input, employees who asked for changes—like the woman who complained about the plug receptacle—were usually ignored or, worse yet, viewed as troublemakers. "Senior management knew how to do *everything* better than the person working on the floor," Smithers grumbled. "There was a autocratic, untrusting environment, especially in manufacturing. I kept hearing things along the lines, of 'Gee, John, real men don't manage that way.'"

In addition, Smithers also suspected that some managers were trying to push through their own agendas by cloaking them in the mantle of the new quality program. "People would say, 'Well, I'm trying to do Total Quality,'" he said, "'and if you don't agree with me, you're not for Total Quality.'"

As Smithers and Murphy continued training people on into October, their sense of operating in a vacuum deepened. Smithers felt, for example, that the site Quality Improvement Team, which was supposed to coordinate and facilitate Total Quality efforts at the facility, was so quiet that most people were unaware of its existence. "There was no visibility," Smithers contended. "No memos, no newsletters. They made promises to us about meeting with people throughout the company but did not keep them." Instead of getting actively involved in the implementation of the program, Smithers felt that the team wasted its time on inconsequential bureaucratic decisions. "The guy in charge of the reward and recognition program spent months trying to write a formula for how many 'Atta

boys' it takes to get a key chain, and how many for a coffee mug," he exclaimed. "All that these people knew about management was how to fill out time cards." Smithers added: "That's the way Sigtek had trained them—it wasn't their fault."

As obstacles to the quality program continued to mount, Smithers voiced his frustrations not only to his boss, but also to his staff of five, and to a number of other direct reports. Although publicly he kept up a facade of optimism, behind closed doors, he confessed his doubts about the program, and his misgivings about Patricof. "I'm a pretty open person," Smithers explained. "Perhaps I wasn't as good a buffer as I could have been. But that's what makes me credible." He added: "I am lucky, because as a person, I can manage in a way that is consistent with my personality and get things done while treating people nicely. Richard Patricof wanted to be the same kind of person, but in my estimation, the required results were missing. He spent so much energy on style that things like the carts in manufacturing wouldn't get fixed."

Pulling Back

By early November, Smithers was ready to put the Total Quality training process on hold. It wasn't that he felt the program had been completely futile. "I could still really get my energy level up during those classes and believe that we were effecting change, because I couldn't have gotten up in the morning if I didn't," he reflected. "If I could change those bouncing carts in three months, versus them never being changed, I could do something."

Nevertheless, Smithers felt that the visible successes had been far too small. In order to build the commitment and enthusiasm necessary to mobilize the workforce, he needed some big wins—examples of real changes that the Total Quality program had achieved. Not only had there been no such big wins, company morale was dipping lower than ever. Sigtek appeared to be headed for its first loss. Moreover, in the seven months since Smithers had first agreed to be a quality instructor, there had been four rounds of layoffs at the company, each more severe than the last.

Convinced of the need for a reassessment, Smithers and Murphy asked for a temporary break in the classes. Once again, Patricof refused their request. "This was clearly not an option with Patricof," Smithers said. "He was obviously thinking, 'Corporate has a schedule, and we will not be the slowest ones.' It was all keeping face."

Smithers kept teaching, but his dissatisfaction grew. The Total Quality program itself, which had seemed to him to be so impressive and thorough at first, now began to seem inflated and overambitious for Sigtek's needs. "Instead of being too little, too late, it was way too much, too late," he declared. "The more I dealt with it, the more I realized it was a cookie cutter program, it was dogmatic, and it was way too much."

Smithers also began to question Telwork's motives in imposing such a program on all of its subsidiaries, regardless of their businesses and needs. Word was going around the plant that Telwork was expecting the same inventory practices and turns from Sigtek that it did from its fiber optic cable companies—businesses that made a straight commodity product. In addition, Telwork didn't seem to understand that a major corporate change typically takes years. "Corporate was giving us such a mixed message," he complained. "They put all this money into a Total Quality program and in the end, all Patricof was supposed to give them was weekly numbers, and I don't mean quality numbers." He added: "The joke was that short-term planning under Telwork is one week, and long-term planning is two weeks. The kinds of numbers we were supposed to give them were physically impossible."

In the midst of all these doubts, Telwork orchestrated a major management change which, to Smithers, at least, formalized a power structure that had already existed in practice for months. Charles Bradley, the founder and president, was terminated, and Patricof—who in Smithers' eyes

embodied all that was wrong with Sigtek's leadership—was named the new general manager of Sigtek.

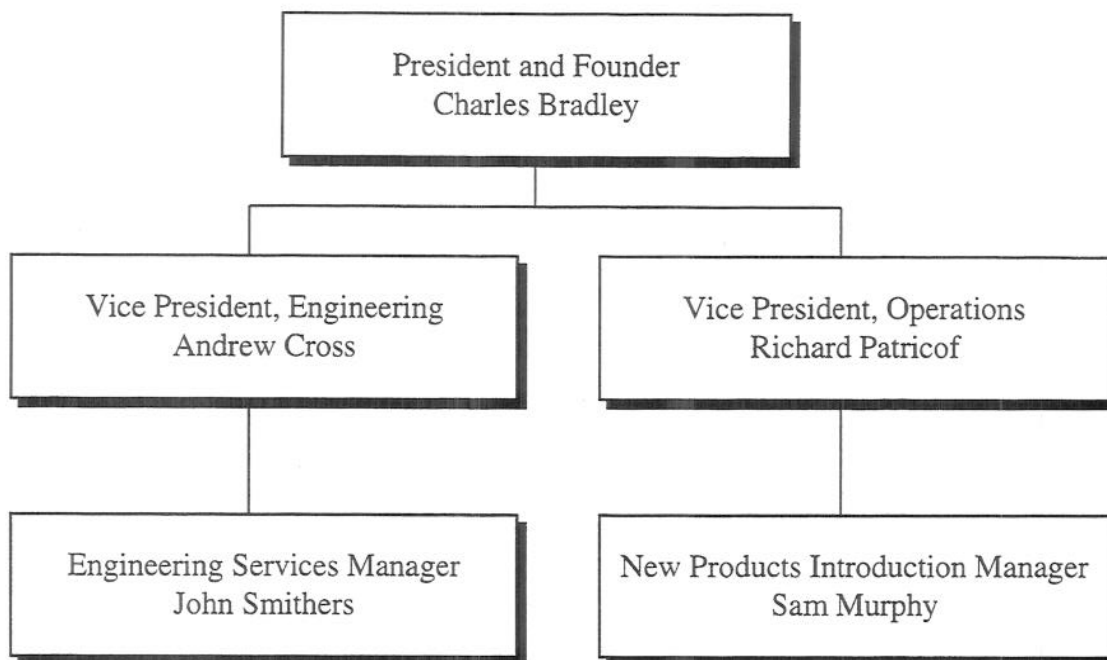
Patricof took two actions immediately after becoming general manager. First, he told Smithers and Murphy that they no longer needed to attend the site Quality Improvement Team meetings, since these were his responsibility. Second, Patricof, in effect, demoted Smithers' boss and mentor, Cross, by naming a second director of engineering and putting Cross in charge of a single, faltering product line.

At this point, Smithers concluded that "the writing was on the wall." "I was lying," he stated bluntly, referring back to his early fear that the teaching job might force him to offer false hopes and expectations to employees. "I asked to stop teaching. My public justification was that my job needed me full time." Smithers made this decision even though he knew it threatened his career. "I realized I was committing suicide," he recalled. "As soon as I got off that teaching schedule, they could lay me off any time." But despite the palpable dislike that Smithers believed existed between himself and Patricof, the new general manager asked him to keep teaching. "He told me I was too valuable and had too many followers to lose," Smithers recounted. "I think I had him in a position he didn't want to be in because to some people I was even more credible than he was."

Although, to others, Patricof's request might have seemed like an endorsement, to Smithers, it appeared that the end was in sight. "By Christmas, there were no knowns," he lamented. "Bradley was gone. Patricof had won. I started doing my resume."

As he looked back over the preceding eight months, Smithers was filled with a sense of profound regret. "I got into an organization where I thought I could accomplish something, I found a good mentor, but it didn't work," he remembered thinking. "Could I have done something different? That's still a hard question for me to answer."

Exhibit 1 Sigtek Organization Chart





Robust Action and the Rise of the Medici, 1400–1434¹

John F. Padgett and Christopher K. Ansell
University of Chicago

We analyze the centralization of political parties and elite networks that underlay the birth of the Renaissance state in Florence. Class revolt and fiscal crisis were the ultimate causes of elite consolidation, but Medicean political control was produced by means of network disjunctures within the elite, which the Medici alone spanned. Cosimo de' Medici's multivocal identity as sphinx harnessed the power available in these network holes and resolved the contradiction between judge and boss inherent in all organizations. Methodologically, we argue that to understand state formation one must penetrate beneath the veneer of formal institutions, groups, and goals down to the relational substrata of peoples' actual lives. Ambiguity and heterogeneity, not planning and self-interest, are the raw materials of which powerful states and persons are constructed.

INTRODUCTION

Regardless of time or place, political centralization lies at the heart of state building. Less widely appreciated is the fact that the process of centralization is contradictory: its agents are forced to seek both reproduction and control. Centralization occurs, often abruptly, when founders emerge out of the soup of contending actors to establish (perhaps unintentionally) new rules for others' interaction. Reproduction ensues when rules induce roles, which induce interests, which induce strategic exchanges, which lock in patterns of collective action that depend on the

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rules.² Control is when others' locked-in interactions generate a flow of collective behavior that just happens to serve one's interests.

The contradiction, in state building or in any organization, is between judge and boss: founders cannot be both at once. Stable self-regulating maintenance of rules (i.e., legitimacy) hinges on contending actors' conviction that judges and rules are not motivated by self-interest (Elster 1983; Padgett 1986; Douglas 1986). At the same time, the nightmare of all founders is that their organizational creation will walk away from them. As Weber recognized long ago, in crisis (sooner or later inevitable), direct intervention in or overt domination of locked-in interactions is a sure sign of control's absence, not of its presence. Tactical tinkering to maintain fleeting control sucks in founders to locked-in role frames, thereby inducing attributions of self-interest and undermining their judicial perch above the fray.

This article analyzes one historical resolution of this state-building contradiction: the early 15th-century rise of Cosimo de' Medici in Renaissance Florence. We focus in particular on analyzing the structure and the sequential emergence of the marriage, economic, and patronage networks that constituted the Medicean political party, used by Cosimo in 1434 to take over the budding Florentine Renaissance state.

The historical case is exemplary in numerous ways. From a state centralization perspective, the period marks the abrupt transition from the late medieval pattern of fluid urban factionalism to the birth of a regionally consolidated Renaissance state (Baron 1966).³ Before the advent of the Medici, two centuries of late medieval Florentine politics could be characterized by a cyclic alternation between guild corporatism and warring urban feudal factions, as is implied by figure 1. Originally, the Medici partook of this ancient rhythm, which became puzzlingly muted thereby. After the rise of the Medici, the periodic explosion of the system, under the pressure of "new men" families surging from below, abruptly stopped, never to be renewed.⁴

² Feedback dependence is not necessarily of the form of everyone's obeying the rules. More common is when rules structure the patterned process of subverting themselves thereby sustaining a mutual symbiosis between subversion and rules. See Padgett (1990) for an example in the domain of courts.

³ The oligarchic regime of Maso degli Albizzi and Niccolò da Uzzano (1382-1433) was significant in effecting this transition, as well as Cosimo's regime (1434-1469). The oligarchic regime spawned the formally democratic institutions that newly constituted "the consensual state" (Najemy 1982). Through political party networks, the Medicean regime learned how to use these institutions for purposes of control (Rubinstein 1966).

⁴ "New men" (*novi cives*) refers to families only "recently" admitted to legal participation in the state. See fig. 1.

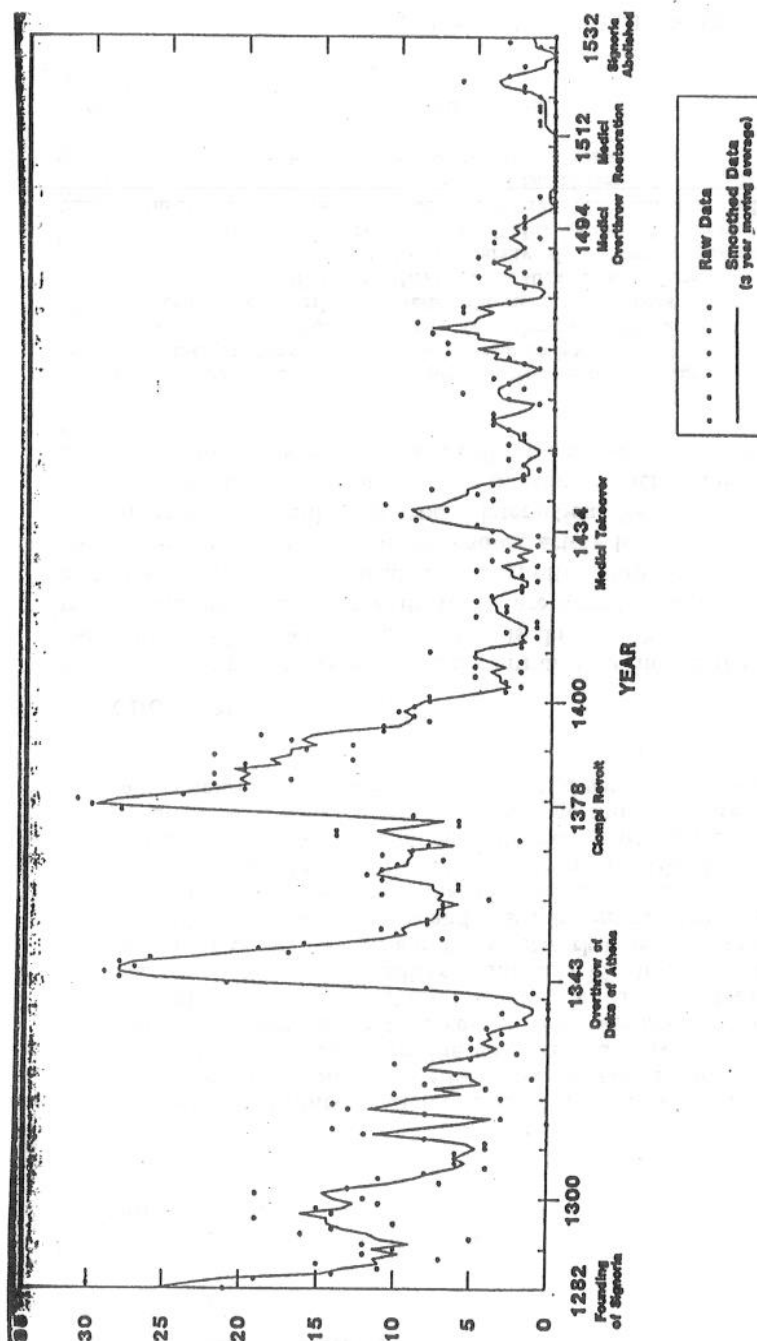


FIG. 1.—New families admitted to the Signoria, 1282-1532 (Source: Najemy 1982, pp. 320-22).

The dynamic underlying Florentine state centralization, we shall show, was this: unsuccessful class revolt (1378–82) and fiscal catastrophe due to wars (1424–33) were the ultimate causes, but these shocks were transmitted through the ratchet mechanism of elite network transformation. A citywide oligarchy, cemented through marriage, first emerged from a quasi-feudal federation of patrician neighborhood hierarchies. The very process of oligarchic consolidation, however, also produced the agent of its own destruction: the Medici party. The Medici party was a heterogeneous mixture of contradictory interests and crosscutting networks. In stark contrast to this fact, contemporaries perceived the Medici categorically as “heroes of the new men.” The Medici’s contradictory agglomeration exhibited great cohesion and capacity for sustained collective action. But what the Medici stood for is unclear to this day.

On the surface, it seems obvious that Cosimo de’ Medici (1389–1464) did it all. Cosimo de’ Medici was multiply embedded in complicated and sprawling Florentine marriage, economic, and patronage elite networks. And he was riding herd on vast macropolitical and macroeconomic forces far beyond his control. Yet he founded a dynasty that dominated Florence for three centuries. He consolidated a Europe-wide banking network that helped induce both international trade and state making elsewhere (de Roover 1966). And he oversaw and sponsored the Florentine intellectual and artistic efflorescence that we now call “the Renaissance.”

Contemporaries deeply appreciated Cosimo’s power. Foreign princes after 1434 flocked to Cosimo’s private palazzo to work out international relations, much to the consternation of bypassed Florentine officials. Cosimo was legally enshrined on his death as the father of his country—no mean recognition from citizens as cynical and suspicious as the Florentines. Machiavelli ([1525] 1988), almost a full century later, still held Cosimo and his family in awe—attributing both all good and all evil in recent Florentine history to Cosimo’s deep and ruthless machinations.⁵

Yet the puzzle about Cosimo’s control is this: totally contrary to Machiavelli’s portrait in *The Prince* of effective leaders as decisive and goal oriented, eyewitness accounts describe Cosimo de’ Medici as an indecipherable sphinx (Brown 1961, p. 186). “Cosimo was anxious to remain in the background, hiding his great influence, and acting, when need arose, through a deputy. As a result, very little is known of the measures for which he was directly responsible” (Gutkind 1938, p. 124). Despite almost complete domination of the state, Cosimo never assumed lasting

public office.⁶ And he hardly ever gave a public speech.⁷ Lest one conclude that this implies only savvy back-room dealing, extant accounts of private meetings with Cosimo emphasize the same odd passivity.⁸ After passionate pleas by supplicants for action of some sort, Cosimo typically would terminate a meeting graciously but icily, with little more commitment than “Yes my son, I shall look into that” (cf. Vespasiano 1963, pp. 223, 226).

Moreover, especially after 1434, all action by Cosimo (never explained or rationalized) appeared extraordinarily reactive in character. Everything was done in response to a flow of requests that, somehow or other, “just so happened” to serve Cosimo’s extremely multiple interests.

We use the term “robust action” to refer to Cosimo’s style of control. The key to understanding Cosimo’s sphinxlike character, and the judge/boss contradiction thereby, we argue, is multivocality—the fact that single actions can be interpreted coherently from multiple perspectives simultaneously, the fact that single actions can be moves in many games at once, and the fact that public and private motivations cannot be parsed. Multivocal action leads to Rorschach blot identities, with all alters constructing their own distinctive attribution of the identity of ego. The “only” point of this, from the perspective of ego, is flexible opportunism—maintaining discretionary options across unforeseeable futures in the face of hostile attempts by others to narrow those options.

⁵ The only state offices Cosimo ever held were short-term: three two-month terms as Gonfalonier of Justice (Gutkind 1938, p. 123), a one-year stint as one of the *Ufficiali del Banco* in 1428 (Molho 1971, p. 218), and a few martial and Monte commissions.

⁶ We know of Cosimo’s reticence because Florentine verbatim documentation of *Consiglio e Pratiche* (an informal “inner elite” advisory body) and other speeches is very extensive. Two rare exceptions were a 1446 debate about potential electoral reforms (Rubinstein 1966, p. 24) and a vigorous public debate with Neri Capponi in 1450 about whether Florence should realign from Venice to Milan (Gutkind 1938, p. 110).

⁷ Contemporaneous reports of Cosimo’s personal style are as follows: “He acted privately with the greatest discretion in order to safeguard himself, and whenever he sought to attain an object he contrived to let it appear that the matter had been set in motion by someone other than himself. . . . He replies were brief and sometimes obscure, so that they might be made to bear a double sense” (Vespasiano [ca. 1495] 1963, p. 223). “In 1432, just before his exile and triumphant return, a political opponent, Francesco Filefo, described in a letter how Cosimo, in contrast to his ‘open and lighthearted’ brother, Lorenzo, ‘is, I notice, despite appearing devoted to me, the kind of man who feigns and dissembles everything. He is so taciturn that he can scarcely be understood even by his intimates and servants in his family circle’” (Brown 1992, p. 106). “Said Neri di Gino [Capponi] to Cosimo: I would like for you to say things clearly to me, so that I can understand you. He replied: Learn my language!” (Poliziano [ca. 1478] 1985, p. 57). Cosimo’s speech, when it occurred, was often Delphic in form. “As Gutkind has suggested, in this situation Cosimo’s use of proverbs and fables served a useful political purpose—in delivering messages ‘in such a way that no one noticed,’ as Vespasiano put it” (Brown 1992, p. 106).

⁸ This is not entirely surprising, since Niccolò Machiavelli enjoyed the freedom to write in the first place because he had been outmaneuvered into exile by his boyhood friends, the Medici. Only their memory of his childhood saved Machiavelli from summary execution, a fact that probably focused his gaze.

Crucial for maintaining discretion is *not* to pursue any specific goals. For in nasty strategic games, like Florence or like chess, positional play is the maneuvering of opponents into the forced clarification of their (but not your) tactical lines of action.⁹ Locked-in commitment to lines of action, and thence to goals, is the product not of individual choice but at least as much of others' successful "ecological control" over you (Padgett 1981). Victory, in Florence, in chess, or in *go* means locking in others, but not yourself, to goal-oriented sequences of strategic play that become predictable thereby.¹⁰

Robust action resolves the contradiction between judge and boss because at the center there are no unequivocal self-interests. Cosimo, after all, "merely" responded graciously to the flow of requests. Because requests had to flow to him, others, not Cosimo himself, struggled to infer and then to serve Cosimo's inscrutable interests. Control was diffused throughout the structure of others' self-fashionings.

Of course, robust action will not work for just anyone. For the flow of requests to be channeled, only some network structures will do. And for the resolution of judge and boss to be credible, coherent interests must remain opaque as far down as it is conceivable to peer.¹¹ Contra Machiavelli, even Cosimo himself did not set out with a grand design to take over the state: this assumption reads history backward. As this article will show, Cosimo's political party first emerged around him. Only later, during the Milan war, did Cosimo suddenly apprehend the political capacity of the social network machine that lay at his fingertips.

⁹ Our original inspiration for the robust action idea was the research of Eric Leifer (1991; this is a revised version of his 1985 Harvard University dissertation), who studied chess. While skill, not identity, was Leifer's main focus, he did point out that experts' moves in chess and in dyadic roles often are directed toward maintaining multiple lines of play, especially in balanced situations. Of course, one difference between Florence and chess is that the multiple networks of Florence constituted an entire linked ecology of games, each game layered on top of another. One single action, therefore, might be a move in multiple games simultaneously.

¹⁰ Harrison C. White (1992) argues along similar lines. John Holland was the one who informed us that locking in others but not yourself to clear lines of play is also the secret to victory in the Japanese game *go*.

¹¹ Of course, Cosimo had goals tied to specific roles—to make money as a banker, to increase family prestige through marriage, to maintain power as leader of Florence—but the points here are three: (1) goals are properties of roles, not of persons, (2) no overarching trade-off or utility function existed for Cosimo that could prioritize these possibly conflicting role-based goals, and (3) once he was in structural position, success in attaining these goals flowed to him without tactical intervention or even effort on his part. In Cosimo's special position, indeed, which role was in play at which time was not transparent. Therefore, whether Cosimo de' Medici was really a person, as conceived by modern liberalism, is undecidable by any means available to us, or to them (cf. Goffman 1974, pp. 293–300; Foucault 1975).

The bulk of this article is an archaeological dig for the structural preconditions of that learning and of that success.

These arguments will be developed in the following stages: after a brief summary of data, we will analyze first the attributional composition and then the social network structure of the Medici party, during the period 1427–34, as compared with those of their opponents, the "oligarchs." After this cross-sectional anatomy, we will sketch the long-term historical dynamic—the emergence first of the marriage and second of the economic patronage halves of the Medici party as a function of ongoing transformations within the Florentine elite. At the end, we will show how contradictory networks induced both robust action in Cosimo and political legitimacy in the Medicean state.

DATA SOURCES AND SELECTION

This article is empirically possible because of the thorough and impressive work of many historians of Florence. In particular, we build on the work of Dale Kent, whose book, *The Rise of the Medici* (1978), in the tradition of Lewis Namier (1929), is an intimate prosopographical description of the network foundations both of the Medici party, or faction, and of the looser alliance system of their opponents.¹² From the detailed text of this account, we coded a core network data set, which consists of information on the following nine types of relations among early 15th-century Florentine elite families: (a) one type of kinship relation—intermarriage ties,¹³ (b) four types of economic relations—trading or business ties, joint ownerships or partnerships, bank employment, and real estate ties,¹⁴ (c) two types of "political" relations—patronage and per-

¹² Some may question whether the term "party" is apt for such an early time period. If presentist definitions, which include reference to mass electorates, are insisted on, then of course the Medici did not organize a party. But the Medicean organization was mobilized, in part, in order to influence the outcomes of popular elections (called "scrutinies") for government office, albeit in a restricted electorate. This certainly fits dictionary meanings of the term.

¹³ At the valuable suggestion of Ronald Breiger, we took care in the second round of our coding to distinguish the family that provided the marrying male from the family that provided the marrying female. Hence, unlike the data provided to Breiger and Pattison (1986), the interfamily marriage relations analyzed here are asymmetric. Only marriages occurring in the time period 1394–1434 were coded. The modern reader may need reminding that all of the elite marriages recorded here were arranged by patriarchs (or their equivalents) in the two families. Intraelite marriages were conceived of partially in political alliance terms. Hence, there is little doubt that, in this time and place, marriage relations were interfamily, not interpersonal, relations.

¹⁴ Kent's sources for all these different types of economic relations (except bank employment) were the 1427 and 1433 *catasti*, which are registers of tax reports. Trading and partnership data were symmetric, by definition, since information on directional-

sonal loans,¹⁵ and (d) two types of personal friendship relations—personal friends and *mallevadori*, or surety, ties.¹⁶ Social network ties were constituents of, as well as backdrops to, Florentine political party formation.

These network data, coded from Kent, were supplemented with attributional data coded from a variety of sources: (a) economic wealth was obtained from the computer tape of the 1427 *catasto*, coded and generously made available for public access by the late David Herlihy and Christiane Klapisch-Zuber (1981);¹⁷ (b) "date of first Prior," the Florentine measure of family social status, was obtained from Najemy (1982) and Kent (1975);¹⁸ (c) neighborhood residence, at both the ward (*gonfalone*) and the quarter levels, was obtained from Herlihy and Klapisch-Zuber's tape (1981) and from Kent (1975); and (d) 1403 tax assessments, for the richest 600 households in the city, were obtained from Martines (1963). In addition, for interpretative purposes, systematic data over time on factional memberships, bank employment, city finances, and rates of neighborhood exogamy were obtained from Brucker (1962, 1977), de Roover (1966), Molho (1971), and Cohn (1980), respectively.

All in all, the unusual richness of these data, from such a distant time, bear witness to the impressive creativity and industry both of the original

ity of trade and magnitude of partnership investment was not provided by Kent. Kent's asymmetric bank employment data were coded mostly from de Roover (1966). Real estate ties were coded as symmetric when they referred to joint ownership of property, and as asymmetric when they referred to rental relations.

¹⁵ "Political" is in quotations here because the motivations underlying these relations may be complicated: a mixture of political aid, economic exchange, personal friendship, and unspecified "building up of credits." Such mixtures of motives are typical of multifaceted patron-client relations.

¹⁶ Personal friends were coded conservatively as such only when Kent seemed to indicate, on the basis of surviving letters, that the relationship had no political content. This coding rule keeps "friendship" from being confounded by our dependent variable, membership in political faction. *Mallevadori* are friends who put up surety, or bond, to guarantee the good behavior of an exile. "Citizens who helped relatives or friends accused of political crimes were motivated by a strong sense of obligation, for they were risking not only money, but their reputations and status" (Brucker 1977, p. 29).

¹⁷ Household economic wealth was aggregated to the clan or "common last name" level of aggregation, to be consistent with other attributional data. Some small amount of error is inevitable in this procedure (Kent 1978, p. 119).

¹⁸ The Priorate (or city council), first created in 1282, was Florence's governing body. This board was almost sacred in its ritual construction (Trexler 1980): membership, on a randomly rotating (within a select circle) two-month-term basis, was public confirmation of one's family's and one's own highest status and honor, in peers' eyes (Martines 1963). Hence, the date of first Prior measures how old and dignified one's family was. Consciousness of their family's date of entry into the elite, relative to other families' dates of entry, was acute among Florentines.

Florentine scribes and of the modern historians who labor in the Florentine field.

Two matters are important to clarify at the outset, in order to frame the universe of this study—the definition of "family" and the definition of "elite."

Operationally, "family" here means "people with a common last name." Hence, it is more equivalent to clan than to household.¹⁹ This level of aggregation is forced on us by the nature of some of our data (particularly, date of first Prior and neighborhood).²⁰ However, F. W. Kent (1977) provides strong substantive justification for this coding. Relations between distant lineages in an elite clan were less solidary during the Renaissance than they had been in medieval *consorteria* times. But, contra Burckhardt (1860) and Goldthwaite (1968), the Renaissance in Florence was not an era of individualism. Relations among households in a clan were typically, although not universally, very strong (see also Brucker 1977, pp. 18–19). The turbulence of the times reinforced defensive cohesion (Brucker 1977, pp. 19–21; Kent and Kent 1981). And communal citizenship and office-holding regulations during the early 15th-century placed more emphasis on the unitary legal character of clans than before (Witt 1976, p. 262; Najemy 1982, chap. 8). In other words, while the clan level of data aggregation is indeed a data convenience, it was also a Florentine social reality.

The definition of "elite" is more complicated. The Florentine political elite (called the *reggimento*) was in no way identical to the Florentine economic elite, in part because of volatility in international markets. In our definition, which emphasizes political practice, we follow the lead of Kent (1975), who in turn follows the practice of Brucker (1977).

For us, a Florentine family is politically elite if it satisfies any of the following criteria: (a) it had two or more members who spoke in the Consulte e Pratiche three or more times between January 1429 and December 1434, (b) it had three or more members who qualified in 1433 for scrutiny, or election to the leading public offices in Florence,²¹ or (c) it was a magnate clan.²² Information on the former two criteria is contained

¹⁹ The median number of households in the 92 elite families studied here is nine. One household, in turn, may contain a number of politically active brothers, in addition to the patriarch father. (See Herlihy and Klapisch-Zuber [1985] for more information on elite vs. nonelite household composition.)

²⁰ But also Kent and Brucker, following the practice of Florentine chroniclers, frequently report alliances and ties by family name only.

²¹ In particular, the so-called Tre Maggiori: the Signoria (or Priorate) and the Dodici and Sedici (auxiliary colleges to the Signoria).

²² Magnate clans were old, previously powerful and violent noble families that had misbehaved politically in the past. They and their offspring were punished by the

in Kent (1975); information on the last criterion (added because of the political importance of this legally excluded group) is contained in Becker (1965) and Lansing (1991). Since official Florentine political participation was comparatively broad, this liberal definition of the ruling elite contains more parvenu new men and upper middle classes than one might expect.

In all, 215 Florentine families (i.e., clans) satisfied one or more of these criteria. Attributes of these 215 families are analyzed in the following section. Kent's book (1978) contains information on at least one marriage or economic relation for 92 of these 215 families. These 92 families are the basis for the network analysis contained herein.

By intention, Kent's book is a comparative study of the Medici party and its oligarch opponents. Hence, the 92-family "sample" is skewed, relative to the 215-family elite "universe," toward active participation in factions and away from political neutrals.²³ We are not aware of any sample bias in Kent's selection of network data among partisans.²⁴

NETWORK STRUCTURE

Attributional Analyses of Florentine Partisanship

Let us begin our analysis in the traditional way: namely, let us ask, Who exactly were the Mediceans and their oligarch opponents? And what social interests did they represent? Four hypotheses (not necessarily mutually exclusive) have been presented in the literature, all built around a common assumption that politics fundamentally means a struggle between self-interested groups.

victorious *popolani* in 1293, and occasionally thereafter, by being excluded legally from high public office (Becker 1965; Lansing 1991). They were politically defanged, however, only in this formal sense.

²³ This fact means that it is difficult, with these data, to study factional participation—only factional membership, given participation, can be studied. As will be seen in the attributional analyses below, however, "factional participation" included virtually all of the economically and socially important families in Florence. Nonparticipation was more an issue for the politically active, but not factional, middle classes. We are currently working to expand our network data set with primary materials, in part in order to evaluate potential sample selection problems. Padgett has been coding original Carte dell'Ancisa marriage records in the Florentine archives, covering the long *durée* period 1300–1500. Our colleague, Paul McLean, likewise has been coding original 1427 and 1433 *catasti* tax records in order to assemble a broader cross-section of economic relations in the Florentine elite. Analyses of these primary materials will be reported in future publications.

²⁴ In particular, residential distribution of marriage dyads (possibly relevant for bias in estimated exogamy rates, calculated below) is not seriously skewed. The slight overrepresentation of San Giovanni families if anything works against the Medici neighborhood exogamy finding reported below.

An older economic class hypothesis is that the oligarchs were rich, and the Mediceans were of the middling sort. Prominent recent exponents of the class perspective, albeit not explicitly applied to the Medici, include Martines (1963) and Cohn (1980). An important variant of the economic class hypothesis applies not to volume of wealth but to its change: the Mediceans were rising economic parvenus, while oligarchs were "old money," generally on the decline.²⁵

Tables 1–4 present distributional data on these two economic class hypotheses for the entire 215-family universe of elite. Distributions of wealth and of change in wealth are tabulated for Medici partisan families, for oligarchic partisan families, and for neutral families. Party memberships were taken, here and throughout this paper, from the two lists published as appendices to Kent (1978).²⁶

Both economic class hypotheses are false. While both the Mediceans and the oligarchs were significantly more wealthy than the neutrals, the two parties' wealth distributions were statistically identical to each other. Moreover, the elite was not split into partisan rich and neutral poor; both parties were extremely heterogeneous in their wealth composition. A similar story holds for change in wealth, as measured relative to a 1403 base. A Marxist class struggle this was not.

Correlated with but not identical to the economic class view is the social class (or prestige) argument: the oligarch party was recruited from older patricians, whereas the Mediceans were new men—defined not in terms of wealth, but rather in terms of the political age of their families. Brucker (1962, 1977) and Becker (1962) are the most prominent exponents of the view that broad stretches of Florentine history should be analyzed primarily as a conflict between old and new family political cohorts. Bolstering this interpretation is the fact that numerous contemporaries, such as (pseudo) Niccolò da Uzzano (Kent 1978, pp. 212–14) and the chronicler Cavalcanti, forcefully analyzed the conflict in class terms, without always distinguishing between economic and social versions.

As presented in tables 5 and 6, evidence for the social class hypothesis is mixed. The oligarchs were indeed more skewed toward patricians than were the Mediceans, but this was due to the relative absence of new men

²⁵ Logically, a third variant might be occupational in focus: the Mediceans were bankers, and the oligarchs rentiers. However, no one in the literature has, to our knowledge, seriously proffered this view, for the simple reason that Florentine economic elites are well-known to have been extremely multifaceted and nonspecialized in their money-making activities.

²⁶ Kent identified Medicean partisans primarily from private letters to and from the Medici. She identified oligarch partisans from lists of those exiled when the Medici took over.

TABLE 1

REGGIMENTO FAMILY DISTRIBUTIONS OF WEALTH IN 1427

Gross Wealth (1,000 florins)	No. of Oligarch Families	No. of Medicean Families	No. of Neutral Families	Total No. of Families	Proportion Partisan
More than 100	4	2	0	6	1.000
50-100	7	7	6	21	.714
10-50	16	23	44	86	.488
0-10	14	10	58	83	.301
Missing	0	0	18	19	.053
Total	41	42	126	215	.414

NOTE.—Median gross wealth (in florins) was, for oligarch families, 21,053; for Medicean families, 20,874; for neutral families, 9,052; for total families, 12,414. The source for the data in this table is Herlihy and Klapisch-Zuber (1981). "Family" is operationally defined by common last name. Hence, the gross family wealth reported here is sums of the prededuction wealth of all households that shared last names in the 1427 *catasto*, according to Herlihy's computerized coding. Numbers do not add perfectly because of families whose partisan loyalties were split. When split families had a majority on one partisan side or the other, they were allocated to the majority side for purposes of the attributional analyses here. However, six families were tied, and excluded from all tabular breakdowns (but not from proportion partisan calculations).

TABLE 2

KOLMOGOROV-SMIRNOV TESTS FOR DISTRIBUTIONAL DIFFERENCE IN FAMILY WEALTH

	Kolmogorov- Smirnov Statistic	One-tailed P
Mediceans vs. oligarchs	.1051	.632
Mediceans vs. neutrals	.3942	.000
Oligarchs vs. neutrals	.3202	.002

NOTE.—Here and in tables 4 and 6, Kolmogorov-Smirnov statistics were calculated on the basis of underlying continuous distributions, not on the basis of the summary tables 1, 3, and 5, in which the data have been made ordinal through cut points. Stricter one-tailed tests which use the chi-square approximation, not the more usual two-tailed Kolmogorov-Smirnov tests, are applied in tables 2, 4, and 6 since the literature implies the following expectations: Mediceans were on average less wealthy, more recently wealthy, and newer (in terms of first prior) than oligarchs. See Blalock (1972, p. 264) for this one-tailed chi-square approximation procedure, which makes it harder to reject the hypothesis that parties are different. (I thank Ed Laumann for this suggestion.)

from the oligarch party, not to the absence of patricians from the Medicean side. Mediceans were not more new men than the oligarchs; they simply were more socially heterogeneous. Relative to political neutrals as a control group, the Mediceans were distinctly old-guard patrician in cast.

Finally, both Dale Kent herself (1978; Kent and Kent 1982) and F. W.

TABLE 3

REGGIMENTO FAMILY DISTRIBUTIONS OF RELATIVE WEALTH CHANGE, 1403-27

Estimated Change in Relative Wealth	No. of Oligarch Families	No. of Medicean Families	No. of Neutral Families	Total No. of Families	Proportion Partisan
More than 100%	2	7	7	17	.588
0% to 100%	15	11	19	46	.587
0% to -50%	8	7	17	34	.500
-50% to -100%	4	8	17	29	.414
Missing	12	9	66	89	.258
Total	41	42	126	215	.414

NOTE.—Median tax in 1403 was 24 florins; median wealth in 1427 was 22,500 florins. The sources for the data in this table are Herlihy and Klapisch-Zuber (1981) and Martines (1963). Since systematic data on wealth do not exist before the 1427 *catasto*, this table is based on the tax tables of 1403 *prestanza* (or forced loans) found in Martines (1963, pp. 353-65). These tables report tax data only on the 150 wealthiest households in each of the four quarters—that is, 600 households in all. Thus, the 1403 *prestanza* information used here is a truncated data set. *Prestanza* tax data of course are not comparable to gross wealth data, so both data sets were standardized by their medians before estimated change was calculated—that is, estimated change = [(1427 wealth/wealth median) - (1403 tax/tax median)]/(1403 tax/tax median). Because of this standardization, "estimated change" refers not to absolute change in florins, which is impossible to know, but rather to relative change, in ranked comparison to peers. Data in the above table (and associated medians) include only those families with nonmissing data in both 1403 and 1427. Missing data is a serious problem here because of the truncated nature of Martines's 1403 "wealthiest" data set.

TABLE 4

KOLMOGOROV-SMIRNOV TESTS FOR DISTRIBUTIONAL DIFFERENCE IN (Estimated) RELATIVE WEALTH CHANGE

	Kolmogorov- Smirnov Statistic	One-tailed P
Mediceans vs. oligarchs	.1735	.395
Mediceans vs. neutrals	.1606	.333
Oligarchs vs. neutrals	.2954	.033

NOTE.—For an explanation of the statistics used, see table 2.

Kent (1977, 1987; Kent and Kent 1982), without directly disagreeing with either class view, distinctively emphasize the importance of neighborhood: The Medici party was rooted in the San Giovanni quarter, particularly the Medici's home ward of Lion d'oro, whereas their opponents were centered in the Santa Croce quarter.

Tables 7 and 8 show that there was no statistically significant difference between the two parties by neighborhood. This does not mean that

TABLE 5

REGGIMENTO FAMILY DISTRIBUTIONS OF SOCIAL PRESTIGE

Date of First Prior	No. of Oligarch Families	No. of Medicean Families	No. of Neutral Families	Total No. of families	Proportion Partisan
1282-1299.....	24	19	26	72	.639
1300-1342.....	10	7	30	48	.375
1343-1377.....	5	9	31	45	.311
1378-1434.....	2	7	33	44	.250
Missing.....	0	0	6	6	.000
Total.....	41	42	126	215	.414

NOTE.—Median date of first Prior is, for oligarch families, 1289; for Medicean families, 1318.5; for neutral families, 1349; for total families, 1327. The source for the data in this table is Najemy (1982, 323-27). Except for the arbitrary date of 1300, the intervals in dates reported here are defined by major revolutions in the history of Florence: 1282, 1343, and 1378. Since large waves of new families were admitted to eligibility in the priorate during these revolutions, the historical periodization in table 5 corresponds to discrete political cohorts. Old magnates either have no date of first Prior, by virtue of never being legally eligible for this office, or have a misleadingly recent date of first Prior, if they were reinstated as *popolani* somewhere along the line. Therefore, most magnates were coded as having a date of 1284, essentially the oldest possible. There are 21 magnate families in this data set.

TABLE 6

KOLMOGOROV-SMIRNOV TESTS OF DISTRIBUTIONAL DIFFERENCE IN SOCIAL PRESTIGE

	Kolmogorov-Smirnov Statistic	One-tailed P
Mediceans vs. oligarchs.....	.2968	.026
Mediceans vs. neutrals.....	.2619	.014
Oligarchs vs. neutrals.....	.4477	.000

NOTE.—For an explanation of the statistics used, see table 2.

geography was irrelevant: the two parties mirrored each other in geographical concentration, especially relative to neutrals. The Mediceans were indeed overrepresented in San Giovanni, but then again so were the oligarchs. San Giovanni was the most polarized of quarters; Santa Croce was a distant second.

The main theme that comes through these attributional analyses is similarity, not difference. With the important exception of the absence of new men from the oligarch side, the Mediceans and oligarchs were mirror images of each other. The elite as a whole appears to have fractured in two, with no underlying social group basis.

A deep historical enigma remains. Contrary to these heterogeneous

TABLE 7

REGGIMENTO FAMILY DISTRIBUTIONS OF NEIGHBORHOOD RESIDENCE

Quarter of City	No. of Oligarch Families	No. of Medicean Families	No. of Neutral Families	Total No. of Families	Proportion Partisan
Santo Spirito.....	7	8	36	52	.308
Santa Croce.....	14	6	33	55	.400
Santa Maria Novella.....	9	7	29	46	.370
San Giovanni.....	11	21	27	61	.557
Missing.....	0	0	1	1	.000
Total.....	41	42	126	215	.414

NOTE.—The source for these data, both for the four quarters and for the 16 *gonfaloni* (or wards), is Kent (1975, pp. 624-32).

TABLE 8

CHI-SQUARE TESTS OF DISTRIBUTIONAL DIFFERENCE IN RESIDENCE

	ACROSS QUARTERS (df = 3)		ACROSS GONFALONI (df = 15)	
	χ^2	P	χ^2	P
Mediceans vs. oligarchs.....	6.629	.084	17.806	.273
Mediceans vs. neutrals.....	12.554	.006	29.567	.014
Oligarchs vs. neutrals.....	2.683	.443	19.660	.185

membership statistics, contemporaries had a perfectly clear, almost polemical, understanding of what was at stake. Virtually all recorded participants interpreted the partisan conflict in traditional economic and/or social class terms: the oligarchs were considered to be the conservative party of old, wealthy, and threatened patricians, and the Mediceans were considered to be the heroes of the economically rising new men (Brucker 1977; Kent 1978). This in spite of the fact that it does not objectively appear to be true.²⁷ A puzzling structural mismatch existed between clear cognitive typifications of social groups at the level of culture and extreme heterogeneity and overlap of social groups at the level of behavioral action.

This puzzle about mismatch between cognition and behavior remains

Moreover, even if the difference were one of policy, not one of membership, fig. 1 shows clearly that the Medici did not in fact represent the interests of the new men once they assumed office.

to be solved, but even at this point we can conclude that tables 1-8 provide *prima facie* evidence against classical group theories of parties, of either the pluralist or the neo-Marxist varieties. These theories assume that parties represent coalitions of groups. But political "groups" in the sense of sets of attributionally similar individuals who solve collective action problems in order to coordinate action on common (latent) interests simply did not exist in Renaissance Florence. Indeed, as we shall show below, the more homogeneous the attributes, the less coherent the collective action. We do not argue thereby that social attributes and groups are irrelevant to party formation; merely that their role needs to be understood within a deeper relational context. There is no simple mapping of groups or spatial dimensions onto parties; social attributes and group interests are "merely" *cognitive* categories, which party mobilization, networks, and action crosscut.

Social Structure: Blockmodel Analysis

We now look more directly at this mobilization, through an analysis of our nine microstructural networks. Party organization was not reflective of any one of these networks, taken alone, but Kent has already demonstrated persuasively the fact that both parties were constructed from differing concatenations of preexisting social networks. We will return in subsequent sections to examine the consequences of these patterns of micromobilization for the aggregate social characteristics (or "interests") that they organized.

The essential step in this task is to derive an overall relational picture of Florence's social structure, within the 92-family ruling elite. For the purposes of this article, we define "social structure" to be marriage and economic networks, which we take to be "strong ties" in Granovetter's (1973) sense.²⁸ Figure 2a presents, in graphical form, the result of our

²⁸ This distinction between "strong tie" marriage and economic networks and "weak tie" political and friendship networks was to some extent arrived at inductively. We were concerned from the beginning with excluding patronage and friendship networks from this particular analysis, because these might be too close to our dependent variable, political partisanship, to be considered legitimate independent predictors. Marriage and economic networks, on the other hand, are driven primarily by nonpartisan calculations. It goes against the whole thrust of our article to assert that these networks were independent of politics, but the first-order consideration in economic relations was making money, while the first-order consideration in marriage was hierarchical status. Furthermore, partisan politics operated on a higher-frequency temporal pulse than did the more glacially changing marriage and economic structures. Personal loans and *mallevedori* ties, however, were ambiguous in our minds. We ran the blockmodel analyses both including and excluding these networks and examined the robustness of the resulting partitions as well as the goodness of fit (see below). Includ-

analyses: an aggregate blockmodel image of the marriage and economic networks, obtained by methods described in Appendix A. Figure 2b presents the parallel blockmodel image of "weak tie" political and friendship networks, based on the family clusters generated by the analysis of marriage and economic data. Appendix B lists the cluster memberships of those families that are contained in the various structural blocks graphed in figures 2a and 2b, along with those families' partisan affiliations and social attributes.

Methodological and goodness-of-fit issues are addressed in Appendix A. Suffice it to say here that the structuralist research style embedded in blockmodeling aggregates actors into structurally equivalent sets, or "blocks," in accordance with their common *external* ties with outsiders, rather than in accordance with dense internal relations with each other (as in cliques). The sets of families observed in Appendix B, in other words, were clustered or "thrust together" by common third-party relations to outside families; the blocks need not (and usually do not) contain any ties within themselves.²⁹

Three graphical points need to be borne in mind in order to interpret the figures: (1) Family labels in figures 2a and 2b do not indicate solo families; they encode the most prominent family in that structurally equivalent block of families (App. B gives details). (2) An image line or "bond" in this global portrait corresponds to at least two underlying ties between families in the linked blocks, of the graphically indicated type. (3) The triangulated circle superimposed onto the blockmodel diagram contains the dependent variable, Medici party membership. The bulk of oligarchic partisans are contained in the rectangular set of intermarrying blocks, directly beneath the Medicean party.

The first thing to observe about figure 2a is that the capacity of marriage and economic blockmodels to predict political partisanship is remarkable, especially given the virtual attributional identity of the two parties. The partisanship of the Medici family itself is impossible to predict from social structure alone, since the Medici family was deeply tied to both sides. But given the Medici split from the lower set of blocks, prediction of Medicean followers is obvious: the enclosed circle of blocks

ing these two networks did not improve goodness of fit but did have the effect of breaking up the oligarch blocks into smaller "globules," an indicator of ties that cut across rather than reinforce the existing system. Figure 2b illustrates this graphically: personal loans and *mallevedori* ties were sent not only to structural intimates, but also to families far distant in the social structure. Perhaps these were the "bridges" in future structural change, as elite families attempted to reach to new partners, just as Granovetter's weak tie image conveys.

If they do, this is indicated in the figures by a circle around the block name.

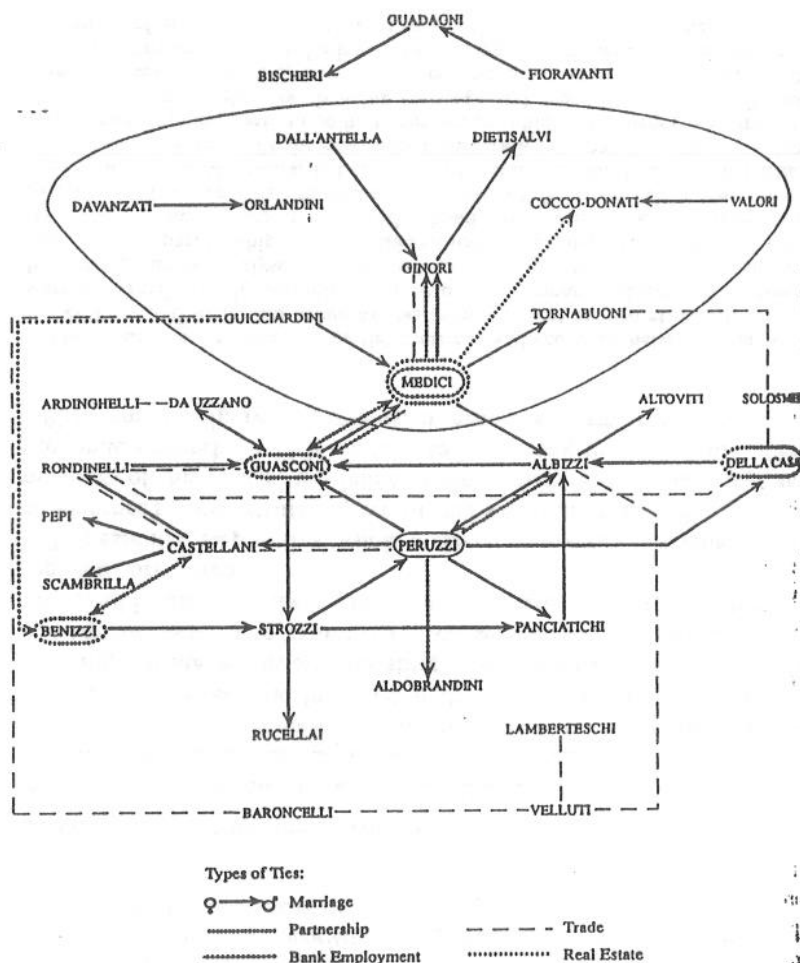


FIG. 2a.—Marriage and economic blockmodel structure (92 elite families)

contains families that had systematic access to the rest of the elite only through the Medici.

More specifically, 93% of the families within the triangulated circle were mobilized actively into the Medici party. Fifty-nine percent of all other families, including neutrals, were organized actively into the oligarch party. Excluding neutrals, 82% of all other partisan families joined the oligarch side (see App. A, tables A1 and A2, for details). Even errors in partisanship prediction here are a bit overstated: in fact, we would predict families in the cross-pressured Guasconi and Albizzi blocks to be

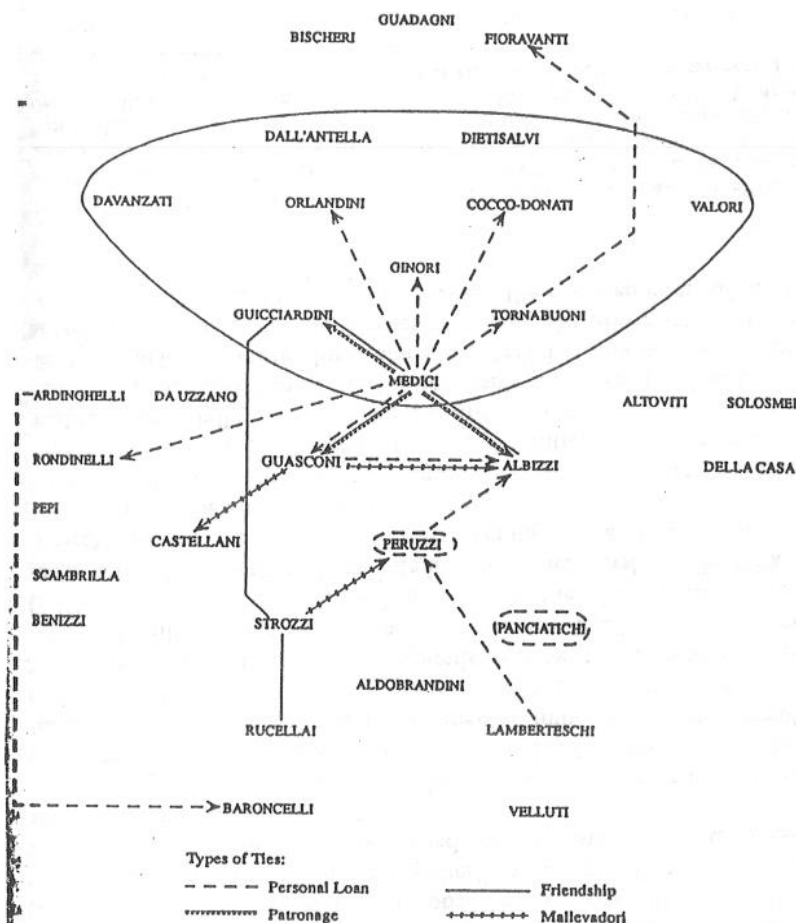


FIG. 2b.—“Political” and friendship blockmodel structure (92 elite families)

split in their partisan loyalties, which for the most part they were. Truly, the microstructure of marriage and economics was central to the formation of parties in Florence.³⁰ Rather than parties being generated by social

The lack of congruence between patronage (fig. 2b) and the rest of the social structure (fig. 2a) is worthy of note. A standard image is that patronage is the glue that binds parties together internally. Here, however, this is not particularly true. Elites did tax, job-hunting, court, and miscellaneous favors for other elites, almost regardless of partisanship, as much as they did favors for their client followers. Even though patronage was pervasive, in Renaissance Florence party was far more deeply embedded in marriage and economic relations than it was in patronage relations.

groups, we argue, both parties and social groups were induced conjointly by underlying networks.

We will return in a later section to a causal discussion of the exact temporal unfolding of this intimate connection between social networks and party membership. For now, however, we discuss only the consequences of this social structure for political control.

Contemporaries and historians have long known that the Medici party was far more cohesive and tightly centralized than was the looser and more cross-pressured oligarch faction. With the aid of figure 2a, it is easy to see why.

The Medici party was an extraordinarily centralized, and simple, "star" or "spoke" network system, with very few relations among Medici followers: the party consisted almost entirely of direct ties to the Medici family.³¹ One important consequence for central control was that Medici partisans were connected to other Medici partisans almost solely through the Medici themselves. In addition, Medici partisans were connected to the rest of the oligarchic elite only through the intermediation of the Medici family. Medici partisans in general possessed remarkably few intraelite network ties; compared to oligarchs, they were structurally impoverished.³² In such an impoverished network context, it is easy to understand how a solo dependence on a powerful family would loom very large indeed (Emerson 1962).

³¹ Graph centralization can be measured with the network betweenness statistic (C_B) of Freeman (1979, p. 230), usually interpreted as intensity of concentration of resources or information flows. Among Medicean families, marriage relations were concentrated at the level $C_B = .362$. Among oligarch partisans, marriage $C_B = .184$. On the economic front, $C_B = .429$ among Mediceans, compared to $C_B = .198$ among oligarchs. (Economic ties, including personal loans, were pooled for the latter calculations. Personal loans were included because otherwise the density of intra-Medicean ties was too low. All data were binarized and symmetrized for these calculations, as required by the Freeman measure.) We thank an *AJS* referee for the suggestion of calculating these statistics.

³² Statistics on two-step ties—the number of families that families tied to the Medici were tied to (by marriage or economic relations)—demonstrate this clearly, especially for the case of marriage. Within this 92-family data set, Medici marriage partners were married, on median, to only 2 other families. (According to blockmodel analysis, these two ties were structurally incoherent.) In contrast, the median number of marriage partners for two oligarch control groups (see below for description) were as follows: 6.5 for Santa Croce faction leader families and 4.5 for oligarchic superelite families. Data on "political" and friendship partners show the same pattern less dramatically: The median numbers of (marriage or economic) partners of Medici "political" or friendship partners were 2 and 3, respectively. This compares with the control groups' partners: 5.5 and 6.5 for the Santa Croce leaders, and 4 and 4 for the superelite. For economic partners, on the other hand, there was little difference: 3.5 for the Medici's partners versus 5 for Santa Croce partners, and only 3 for the partners of the superelite.

Conversely, the oligarch side was densely interconnected, especially through marriage. Dense structural interconnection, however, did not lead to cohesive collective action. The oligarchs were composed of too many status equals, each with plausible network claims to leadership. In dense networks in times of crisis, cacophony ensued, as each family conspired privately with other families to which they were tied about the proper course of action. Simultaneous and contradictory conversations redounded through ambagious private network channels, generating cross-pressure on each family instead of collective convergence.

A concrete behavioral example, the final "military" showdown between the two sides, will illustrate this point. On the morning of September 26, 1433, Rinaldo Albizzi, titular leader of the oligarchs, passed the word to his supporters to assemble their troops at a certain piazza in order forcibly to seize the city hall and the government (Kent 1978, pp. 332–34). At the appointed hour, only a portion of his supporters appeared. Each supporter looked around at, and no doubt consulted with, other supporters, and a stochastic threshold equilibrium ensued, in which repeated efforts by Rinaldo to assemble more troops (especially from Palla Strozzi) were offset by other supporters' changing their mind and drifting away.

In contrast, while the oligarchs dithered, the Medici immediately and decisively mobilized their supporters to join the Priors in the embattled Palazzo Vecchio. The clarity of this coordinated response was astonishing, given the fact that Cosimo and Lorenzo de' Medici were in Venice at the time.³³ As a result of this Medicean mobilization, no military engagement actually ensued, since it became clear to Albizzi supporters, not to Rinaldo himself, that they had no chance. At this point, popular opinion swung massively behind the Medici, Cosimo was recalled from Venice in triumph, and Cosimo's oligarchic enemies were exiled, this time for good.

Kent (1978, pp. 228–34) also gives examples, less dramatic than this, of the greater cohesion of the Medici side during 1427–28 electoral maneuvering.

Even granted this explanation of the greater cohesion of the Medici side, an equilibrium puzzle remains: How could such a centralized spoke system maintain itself? Florentine clientage systems historically had been notoriously fluid. And the oligarchs had a clear incentive to marry into and do business with Medici supporters, thereby inducing cross-pressure and sowing dissent. The Medici supporters would appear to have had

³³ Temporarily, the Medici brothers had been exiled. They were not, however, successfully cut off from secretly communicating with and issuing standing orders to their supporters.

an equally clear incentive to respond, in order to alleviate their extreme dependence. At the very least, one would assume Medicean supporters would want to interbreed among themselves, for defensive if no other purposes, for only then would they have the organizational capacity to resist Medici domination, should they ever choose to do so. Structural isolation among Medici partisans would seem to have been in the long-term self-interest only of the Medici.

This structural atomization puzzle is only deepened through closer inspection of figures 2a and 2b. Two large blocks of Medici supporters were connected to the Medici essentially through marriage alone. Other blocks of Medici supporters were connected to the Medici solely by economic or by personal loan relations. The Medici had strongly multiplex ties with the oligarch Guasconi block,³⁴ but, within their own party, the Medici did not marry those families with whom they engaged in economic relations, nor did they do business with those whom they married.³⁵

This is in sharp contrast to the greater multiplexity of relations on the oligarch side: core oligarch families, the superelite and the Santa Croce faction leaders (see below), married into 40% and 38%, respectively, of the clans with whom they did business.

Most sociologists' Durkheimian presumptions are that the more overlapping ties one has with another, the more closely and holistically bound the other is to you. Obligations from one sphere spill over into another. The Medici, however, apparently believed the opposite: to control followers politically, segregate one's social relations with them. On the whole, multiplex ties (across marriage and economics) were discouraged. Thus, structural isolation operated in two ways: the marriage and economic isolation of partisans from all others (including other partisans), and the segregation of types of ties with the Medici themselves.

Comparative Statics of Attributes with Networks

The beginnings of an understanding of stability can be gained from a reexamination of the social attributes listed in Appendix B. The large Guicciardini and Tornabuoni blocks, with whom the Medici were intermarried, were composed virtually entirely of patricians (i.e., date of first Prior before 1343) who also had substantial wealth. In sharp contrast, the Ginori, the Orlandini, and the Cocco-Donati blocks, to whom the Medici were connected through economic or personal loan ties, were

composed almost entirely of new men (date of first Prior after 1343). The remaining Medicean blocks—the Davanzati, the dall'Antella, the Dietisalvi, and the Valori blocks—were for the most part patricians of only modest wealth. These blocks of families were connected to the Medici indirectly, via intermarriage with economically connected new men.

The hybrid social class character of the Mediceans, revealed in tables 5 and 6, has now been clarified: actually, the Medici party was an agglomeration of structurally disjoint patrician and new men components. Different social class interests were embodied in the Medici party; (social) class contradiction was quite real. Not only that, but within the party these elements were separately clustered by Medici ties and then kept rigidly segregated from each other, to be connected indirectly only through the Medici themselves.

Given this, there is no particular mystery about the low intermarriage rate among Mediceans: patrician and new men supporters despised each other. Status-conscious patricians (Medici included) usually would not dream of sullyng their own honor by marrying into new men families; such would be a downward-mobility admission of status equality. Part of the distinctive Medicean party organization, in other words, was simply leveraged off and sustained by the ordinary cognitive classifications and social marriage rules of Florentine elites.

A close reexamination of Appendix B also reveals a second striking attributional cleavage between these Medicean social class segments, this time on the dimension of neighborhood. Almost none of the patricians in the Guicciardini and Tornabuoni blocks came from the San Giovanni quarter, where the Medici resided. The Medici, in other words, did not marry those with whom they lived.³⁶ However, 10 of the 14 families in the other Medici blocks—both new men and the indirectly tied patricians, married to new men—resided in San Giovanni. The Medici, in other words, did a great deal of business (plus personal loans) with those with whom they lived. In addition, they somehow induced local San Giovanni patrician supporters to marry into the families of their economic partners, rather than into their own.

Thus, the Medicean supporters were deeply cleaved on two attributional dimensions simultaneously—social class (i.e., prestige) and neighborhood. Not only did the various components despise each other; they did not run into each other much either. Only the Medici family itself linked the segments.

To give a more precise sense of the distinctiveness of this Medici agglomeration, we present table 9. The upper panels of the three parts

³⁴ The Medici bank was a primary source of these exceptional multiplex ties. Often such multiply tied exceptions did not politically support the Medici in the end—e.g., two prominent families in the Guasconi block: the Bardi and the Guasconi themselves.

³⁵ There was only one exception to this rule: the Tornabuoni.

³⁶ Weissman (1982) makes vivid the dense piazza-oriented street life of Renaissance Florence, in which one constantly mingled with (or at least ran into) one's neighbors.

TABLE 9

SOCIAL ATTRIBUTES AND PARTISANSHIP OF TIES: MEDICI VERSUS SUPERLITE VERSUS SANTA CROCE FACTION LEADERS

	SOCIAL PRESTIGE: DATE OF FIRST PRIOR					
	Medici			Superlite		
	Pre-1343	Post-1343	n	Pre-1343	Post-1343	n
Allocation of types of ties:						
Marriage (M).....	.93	.07	28	.93	.07	58
Friendship (F + M).....	1.00	.00	9	.87	.13	31
"Political" (L + P).....	.62	.38	45	.86	.14	21
Economic (T + P + B + R).....	.44	.56	27	.88	.12	16
Total.....	.69	.31	109	.90	.10	126
Political support consequences of ties: ^a						
Marriage (M).....	.71	1.0		.73	.31	
Friendship (F + M).....	.76	...		.57	.00	
"Political" (L + P).....	.58	.97		.42	.17	
Economic (T + P + B + R).....	.55	.90		.81	...	
Total.....	.64	.94		.65	.25	

ECONOMIC CLASS: WEALTH (in 1,000 Florins)

	Medici			Superlite		
	More than 25			More than 25		
	0-25	n		0-25	n	
Allocation of types of ties:						
Marriage (M).....	.82	.18	28	.79	.21	58
Friendship (F + M).....	.89	.11	9	.81	.19	31

Allocation of types of ties:

Marriage (M).....	.82	.18	28	.79	.21	58
Friendship (F + M).....	.89	.11	9	.81	.19	31

Allocation of types of ties:

Marriage (M).....	.82	.18	28	.79	.21	58
Friendship (F + M).....	.89	.11	9	.81	.19	31
"Political" (L + P).....	.62	.38	45	.86	.14	21
Economic (T + P + B + R).....	.44	.56	27	.88	.12	16
Total.....	.69	.31	109	.90	.10	126
Political support consequences of ties: ^a						
Marriage (M).....	.71	1.0		.73	.31	
Friendship (F + M).....	.76	...		.57	.00	
"Political" (L + P).....	.58	.97		.42	.17	
Economic (T + P + B + R).....	.55	.90		.81	...	
Total.....	.64	.94		.65	.25	

NEIGHBORHOOD: CITY QUARTER

	Medici			Superlite		
	Outside Quarter			In Quarter		
	San Giovanni	n		Outside Quarter	n	
Allocation of types of ties:						
Marriage (M).....	.14	.86	28	.36	.64	58
Friendship (F + M).....	.33	.67	9	.29	.71	31
"Political" (L + P).....	.40	.60	45	.48	.52	21
Economic (T + P + B + R).....	.59	.41	27	.31	.69	16
Total.....	.38	.62	110	.36	.64	126
Political support consequences of ties: ^a						
Marriage (M).....	.58	.76		.65	.73	
Friendship (F + M).....	.78	.76		.33	.57	
"Political" (L + P).....	.82	.62		.60	.18	
Economic (T + P + B + R).....	.84	.60		.80	.80	
Total.....	.80	.68		.61	.62	

NOTE.—Superlite families are Peruzzi, Albizzi, Strozzi, and Gianfigliuzzi. Santa Croce faction leaders of the oligarch side are Peruzzi, Ricasoli, and Castellani. Amount shown, except for $\frac{1}{2}$, are proportions.

^a Political support consequences of ties = (no. of ties to fellow partisans)/(total no. of ties), with split families allocated proportionately. A tie to a neutral family is treated the same here as a tie to an enemy.

tabulate prestige, wealth, and neighborhood endogamy rates for the Medici and for two comparable oligarch reference groups: a set of superelite families—the Peruzzi, the Strozzi, the Albizzi, and the Gianfigliuzzi—and a set of Santa Croce faction leaders—the Peruzzi, the Ricasoli, and the Castellani families. The lower panels of the three parts give the partisanship consequences of the network mobilization ties tabulated in the upper panels.

We begin by discussing the first control group, the superelite. Table 9, part A, on prestige, shows that the Peruzzi, Strozzi, Albizzi, and Gianfigliuzzi families were patrician to the core. It mattered not what the type of network relation was—marriage, economic, “political,” or friendship; across the board, these families directed about 90% of their ties to fellow patricians. New men were snubbed in all spheres.

Table 9, part B, on wealth, tells a similar story, with one exception: the superelite did business with many less well off families. But this was just another sign of their exclusivity on prestige. Even though many patricians had fallen on hard times, the superelite stuck with them in their economic relations, rather than switch to wealthier new men.

Santa Croce factional leaders behaved little differently, except of course that their degree of social exclusivity was slightly less than that of the superelite, since their own status was slightly lower.

Compared to these reference groups, the Medici's own network strategies were, as already argued, more differentiated. In marriage and friendship, the Medici were even more snobbish than the superelite, if that were possible. However, in the economic sphere, the Medici associated heavily with the new men, quite unlike their elite counterparts. “Political” ties (i.e., personal loans and patronage) were intermediate in social class endogamy; the Medici established such relations with both their economic and marriage partners. The Medici's distinctiveness within the elite, in other words, was not that they represented new men; their distinctiveness was that they associated with them at all.

The political responsiveness of those new men with whom the Medici chose to associate was breathtaking: 90% and 96% of those new men tied to the Medici through economic or “political” relations became active Medici partisans. This rate of response was so overwhelming, indeed, that the fact that the Medici did not associate with more new men shows that party building was not the only thing on their minds. New men not explicitly mobilized through Medici ties showed no great enthusiasm for the Medici cause (see tables 5, 6).

Thus, we have an important insight into the reason for the strong contemporary image of the Medicean party affair as a social class struggle. It was not that the Medici did all that much actively to mobilize new men. It was that the oligarchs did so extraordinarily little. In as deeply

elitist a context as Florence, a mere pittance thrown the new men's way, even by such an archpatrician family as the Medici, could generate overwhelming response. Parvenu new men, anxious for inclusion but long barred from entry, were structurally available, awaiting mobilization, for reasons that had nothing to do with the Medici per se. The Medici opened the door just a crack, and for that they were polemically tarred by their enemies with the rhetorical brush of class traitor: the label “heroes of the new men” connoted contempt. *Cognitive classification of Medici group identity, both by contemporaries and by historians, was the product not of Medici action but of vitriolic oligarch polemics* (supported, no doubt, by wishful thinking among new men). Inscrutable Cosimo of course did nothing to deny it.

Table 9, part C, demonstrates statistically what we have already asserted about neighborhood. Both the superelite and the Santa Croce faction leaders were citywide in their networks, regardless of type of tie.³⁷ In contrast, the Medici's relations geographically were quite differentiated: only 14% of Medici marriages were within their home quarter, compared with 36% for the superelite. Yet 59% of Medici economic ties were within San Giovanni, compared with 31% for the superelite.

We now have a clear picture of the structure of the Medici party and of its roots in elite network strategies. The Medici party was an agglomeration of doubly disarticulated parts: structurally isolated new men living within San Giovanni, whom the Medici mobilized directly through economic relations, and structurally isolated patricians residing outside San Giovanni, whom the Medici mobilized directly through marriage. Conscious residential segregation, as well as “natural” social class segregation, were keys to the inhibition both of independent ties among followers and of multiplex ties with the Medici themselves. The result was an awesomely centralized patrimonial machine, capable of great discipline and “top down” control because the Medici themselves were the only bridge holding this contradictory agglomeration together.³⁸

³⁷ Perhaps an exception could be argued for the cases of loans and patronage.

³⁸ Our general position on the interrelation of social attributes and social networks can now be clarified. Obviously (contra some occasionally overstated polemics by network aficionados) we do not believe that social attributes are irrelevant: the particular way in which the Medici recombined social attributes through networks is the heart of the story here. What we object to is the arraying of attributes discretely as groups or spatially as grids—a procedure that presumes attributes to be behaviorally meaningful in a network vacuum. Of course, actors in the system, as well as researchers, do exactly these clustering procedures mentally when they analyze their own social structure; this is what “boundedly rational” cognitive classifications are all about. But there is a widely underappreciated gap between these macrocognitive (or “cultural”) operations and microbehavioral “local action” taken by concrete individuals in very particular, heterogeneous, and often cross-pressured circumstances. Sim-

The specific micromechanisms that translated this network structure into Medici control were as follows:

1. Spoke structure induced common dependence of partisans on the Medici for access to the rest of the elite, and it forced any sensitive intraparty communication that required tie-enforced trust to be channeled through the Medici (cf. Molho 1979, p. 19).

2. Double segregation of attributes inhibited defensive counteralliance among mutually suspicious partisans: no "revolt of the colonels" was possible.³⁹

3. Interactionally, marrying geographically distant patricians, whom the Medici met casually only rarely, kept affine relations socially proper and formal—thereby inhibiting unwanted presumptions of familiarity and status equality. In contrast, doing business with new men inside the neighborhood engendered motivationally useful friendliness. The status gap between Medici and new men was so enormous that the Medici did not need to fear any slackening of their abject deference.

4. The attributional heterogeneity of the party made the Medici party a swing vote, potent beyond its numbers, in Florentine legislative politics. The reason, explained below, was the bitter class polarization that was reviving in Florence.

Thus, attributional heterogeneity and contradiction of group interests were not a problem for Medici party control. Quite the contrary, they were the keys to Medici control. For this result to be generally true, however, surrounding cognitive group identities (and animosities) must be intense. Stable monopoly of broker position is leveraged off this, and practical political organization becomes cognitively invisible (or at least murky) to the outside world precisely when it cuts across strong identities.

NETWORK DYNAMICS

The Dynamics of Party Formation: Patrician Marriage

We have insufficient space in this article to show how figure 2a emerged historically in detail, but in the next two sections we shall sketch the

plifying social reality into homogeneous subsets "with common interests" rips individuals out of their (often contradictory) multiple network contexts and obscures the very heterogeneity and complexity of which organizations like the Medici party are constructed.

³⁹ A "revolt of the colonels" requires more than just comparing dissatisfactions. Colonels have to have confidence that other colonels are not just stabbing them in the back. There has to be an organizational infrastructure, independent of the boss, through which they can coordinate. And there has to be something they are offering to each other that is better than their current state. Crosscutting Medici networks inhibited each of these preconditions.

driving dynamic: elite marriage and economic networks were reconfigured by working-class revolt and wartime fiscal crisis, respectively. Elite reconfiguration explains why oligarchs would not marry Medicean patricians.

Our core conclusion regarding party formation will be simple: Cosimo de' Medici did *not* design his centralized party, nor did he intend (until the very end) to take over the state. The network patterns of figure 2a were produced by oligarchs' earlier successful reassertions of their own control. The Medici party grew up around Cosimo and Lorenzo from raw network material unintentionally channeled to them by the oligarchs' previous smashing both of the wool workers known as *ciompi* (1378) and of the new men's challenge during the Milan and Lucca wars (1424–33). Only very late in the game, we shall argue, did the Medici adaptively learn of the political potential of the social network machine that lay at their fingertips. In almost Hegelian fashion, oligarchs crafted the networks of their own destruction.

Historical trends in neighborhood exogamy.—The first thing to appreciate in any dynamic analysis of Medicean marriage strategy is the fact, uncovered by Cohn (1980), that increasing rates of neighborhood exogamy were a historical trend in Florentine elite marriage behavior. The Medici were not tactical revolutionaries; they were simply the leading edge of an ongoing transformation in the network structure of the Florentine elite.

Table 10 presents a recalculated version of Cohn's neighborhood data, along with our own data for historical comparison. By coincidence, Cohn studied the mid-14th- and late 15th-century periods, which bracket the early 15th-century focus of this study. Since Cohn's primary focus was on changing marriage patterns within the lower classes, the volume of elite marriages is lower than that which was extracted from Kent.⁴⁰ Cohn's listing of his late 15th-century data permitted a further breakdown into "state marriages" and others—a concept that has no real meaning for the period before the Medici changed the republic into a *de facto* principality.⁴¹ It is reassuring, given different operational defini-

⁴⁰ For the lower classes, or *popolo minuto*, Cohn found a trend just the opposite of that of the elite: increasing rates of marriage *within* neighborhoods. Some portion, but not all, of this trend was due to growing immigrant ethnic enclaves, organized around the silk industry. Cohn argues forcefully that new administrative methods of lower-class control (containment within parishes) during the late 15th century inhibited cross-neighborhood contact and organization among workers. A recurrence of the Ciompi revolt became well-nigh impossible (cf. Molho 1979).

⁴¹ We label as "state marriages" those marriages registered by Lorenzo de' Medici's personal secretary. "The majority of these marriages were celebrated at the Medici palace and were witnessed by Lorenzo. In several instances Lorenzo even provided

TABLE 10
HISTORICAL TRENDS IN ELITE MARRIAGE

	No. within Parish	No. within Gonfalone	No. within Quarter	No. across Quarter	Total
I. Fourteenth-century elite marriages (1340-83)* i...	5 (20)	8.5 (34)	12 (48)	13 (52)	25
II. Early 15th-century elite marriages (1395-1434):†					
Patrician-patrician		16 (12)	37 (29)	92 (71)	129
Patrician-new man		8 (27)	17 (57)	13 (43)	30
New man-new man		1	1	1	2
Total		25 (16)	55 (34)	106 (66)	161
III. Late 15th-century elite marriages (1450-1530):‡					
State marriages:††					
Patrician-patrician		0 (0)	1 (8)	11 (92)	12
Patrician-new man		1	1	1	2
New man-new man		0	0	0	0
Total		1 (7)	2 (14)	12 (86)	14
Other elite marriages:					
Patrician-patrician		0 (0)	2 (29)	5 (71)	7
Patrician-new man		1 (17)	4 (57)	3 (43)	7
New man-new man		0 (0)	2 (40)	3 (60)	5
Total		1 (5)	8 (42)	11 (58)	19

NOTE.—Numbers in parentheses are percentages.

* "Elite" is defined by family name plus a dowry of at least 400 florins. Data are from Cohn (1980, p. 52). To make the data comparable with others in this table, we report the number of marriages rather than Cohn's "number of marriage relations," which, for Cohn, equaled two times the number of marriages, i.e., one for each partner.

† "Elite" is defined by political participation (see text). Data are from this article. Except for "Total" in this category, entries refer to marriages between a patrician and a patrician within the political elite, to marriages between a patrician and a new man within the political elite, etc.

‡ "Elite" is defined by having passed scrutiny plus a dowry of at least 600 florins. Figures are from marriage data listed in Cohn (1980, pp. 54-56.) Due to the passage of time, "new men" is defined here as post-Ciompi (post-1383), rather than post-1343 as in the rest of this paper.

†† These are marriages notarized by Lorenzo de' Medici's personal secretary (see Cohn 1980, p. 53).

tions of the elite, that neighborhood endogamy/exogamy estimates are perfectly consistent between our two studies.

These aggregate statistics demonstrate what has already been asserted—that rates of elite marriage outside neighborhood quarter increased progressively over the course of the 14th and 15th centuries. Cohn's elite marriage data are too scanty to disaggregate reliably by decade, but the combined data give the impression that the bulk of change occurred between 1383 and about 1420—namely, precisely at the time when the patrician elite reconsolidated its control after the disastrous (from their perspective) Ciompi revolution.

Cross-sectional estimates are also consistent: for both 15th-century periods, the higher the position in the elite hierarchy, the higher the rate of marriage outside neighborhood. Patricians married other patricians at higher exogamous rates than they married new men. And, most striking in spite of the low numbers, 92% of state marriages in the late 15th century were arranged across rather than within neighborhoods. In other words, what in the early 15th century was an innovative Medici strategy of partisan control, applicable only to their own marriages, later appears to have become official state policy, applicable to all their top supporters.

This trend is better interpreted from the perspective of its origin than from knowledge of its final result: patrician neighborhood clusters based on marriage gradually dissolved. The Peruzzi-Ricasoli-Castellani clique in Santa Croce, the Albizzi and Guadagni blocs in San Giovanni, and the Strozzi group in Santa Maria Novella indicate clearly that this process was hardly complete during our period (if indeed it ever was).⁴² But this "neighborhood solidarity" mode of elite organization, which linked patricians of different stature, was a residue of the past.

In particular, this mode historically descended from feudalism. Florentine neighborhoods originally (in the 1200s) were settled by immigration from contiguous regions of the surrounding rural countryside. Urbanizing feudal lords brought their hierarchical retinues with them, thereby creating self-sufficient neighborhood pockets with stronger ties to the rural homeland than to other parts of Florence (Weissman 1983, pp. 7-9). By the 15th century, "feudalism" is hardly an apt description of Florentine

the dowry. We find the state, in effect, taking an active role in the structuring of marriage relations, which were at the same time political alliances" (Cohn 1980, p. 53).

Given the vigor of F. W. Kent's recent defense (1987) of the continuing importance of neighborhood in quattrocento Florence, a clarification is in order. We are not arguing that the importance of neighborhood for patricians declined, in some totalistic sense. In fact, we agree with Kent's emphasis on neighborhood patronage (and, we would add, neighborhood economics). However, marriage was no longer the primary basis of elite consolidation within quarter.

neighborhoods, but hierarchical intraneighborhood marriage among patricians persisted.

As neighborhood marriage solidarity disintegrated roughly around the turn of the century, however, patricians may have been almost forced to reach outside the comfortable (and essentially defensive) shells of their own wards, parishes, and piazzas. Later, such marriage outreach would provide the organizational infrastructure to undergird the emergence of a self-consciously "city" elite, psychologically (though not materially) decoupled from its original neighborhood base.⁴³

The question therefore arises: What forces led to this widespread corrosion of elite neighborhood solidarity and to its replacement by elite neighborhood exogamy? The answer to this question will take us far toward understanding the historical roots of the Medici's own innovative marriage strategy.

Political vulnerability among Medicean patricians.—The mid-14th-century, pre-Ciampi story is best told by Brucker (1962). Progressive waves of new men were economically thrust up by the internationalization of trade and finance. Without aristocratic sponsorship, such mercantile new men (hardly radicals in any event) were doomed to political ostracism and frustration. However, this upward thrust often coincided with intraelite factional cleavage. The Albizzi-Ricci factions were the most important such split in the mid-14th century, with the Ricci garnering more new men's support. Intense politics ensued from 1343 to 1378 about who was to be eligible for election to the Signoria. The new men (with artisan support) took the tack of trying to label their opponents officially as lawless magnates, and the old guard countered by trying to get their opponents designated as traitorous antipapal Ghibellines.

Eventually, such aristocratic-mercantile feuding got out of hand, and the Ciampi rose up in alliance with the artisans to take over the state for two months in 1378. Through their major guilds, the merchants quickly realigned with artisans in minor guilds to reestablish control, but in 1382 this alliance in turn was overthrown by an embittered patrician elite (which included earlier cohorts of now old "new men" merchants). These "oligarchs" excluded the artisans and ruled Florence until the Medici took over in 1434.⁴⁴

⁴³ This extrapolation into psychology is not fanciful. Without much commentary, Cohn reports (1980, p. 37) that he had much trouble reconstructing the neighborhood residences of his late 15th-century families, because notaries of the time, who registered the marriage deeds, recorded these families only as *cives Florentinis* (citizens of Florence). In contrast, in the 14th century, residence down to the level of parish was routinely recorded, irrespective of status.

⁴⁴ In the field of Florentine studies, Brucker represents the highest quality of history written with groups as the primary agents. While I disagree with his group-based approach, I have nothing but the highest respect for his pathbreaking research.

For us, the clue in this account is to understand how first the Albizzi-Ricci factional feuds and then the searing revolt of the Ciampi placed strain on neighborhood solidarities. Could it be that intraelite factional struggles of the 14th century were so intense that, first following medieval patterns, they polarized each neighborhood into competing patrician clusters (cf. Barth 1959), but then, because of Ciampi escalation, they pulverized the losing patrician side into structural isolates, which the Medici much later exploited? If so, this would account in part for the increasing rate of neighborhood exogamy, as the winners and, even more, the losers had fewer compatible intraneighborhood marriage options to choose from. Assuming social class endogamy, Florentine patrician marriages would be forced outward because of neighborhood blockage, or structural "holes," within.

We will test the plausibility of this account in pieces. One observable corollary of the hypothesis is that Medicean patrician support derived disproportionately from losers of earlier factional struggles. We have gathered evidence from secondary sources (a) about patrician family membership in the mid-14th century Albizzi and Ricci factions and (b) about patrician support for the 1378–82 Ciampi/artisan regime. We also have very limited information about the Alberti faction (a transformed descendant of the Ricci) of 1385–1400.

From the detailed text of Brucker (1962), we could identify 39 14th-century families from the Albizzi or Ricci factions that also appeared in Dale Kent's (1978) list of 1434 partisans. The relationship between these two lists of partisans is shown in table 11. The evidence is much stronger for the historical continuity of the winning oligarchic side than it is for the losing "liberal" Ricci. The Medici did indeed gain some support from families of the old 14th-century Ricci faction, but this support is not a major factor in Medicean mobilization.⁴⁵

More convincing evidence of historical continuity dates from the 1378–82 period. Najemy (1982, p. 260) has published a list of families from "traditional inner elite" families that were members of the governing Signoria during the 1378–82 corporatist guild regime. This list of 15 "collaborator" patrician families is as follows: Alberti, Aldobrandini, Ardinghelli, del Bene, Corbinelli, Corsini, Davanzati, Medici, Pitti, Rinuccini, Salimbeni, Salviati, Scali, Strozzi, and Vecchietti.

Six of these families were unequivocal Medici supporters in 1434. Moreover, the split Salviati family leaned strongly to the Medici side

⁴⁵ In hindsight, perhaps we should not have expected much from such a lengthy time-lagged effect. Not only did much transpire between the Ricci and the Medici, but the leaders of the Ricci and Alberti factions were not just ostracized; their participation, and even life, in the regime was completely obliterated.

TABLE 11
LEGACY OF MID-14TH CENTURY PARTISANSHIP

1360 PARTISAN FAMILIES*	1434 PARTISAN FAMILIES†		
	Medici	Split	Oligarch
Albizzi faction.....	4	3	12
Split loyalties.....	4	4	2
Ricci faction.....	5	2	3
Not mentioned in Brucker.....	44	3	34

* Brucker (1962).

† Kent (1978).

(Kent 1978, p. 55), and the technically neutral Corsini were in the process of joining the Medici when 1434 arrived (Kent 1978, p. 53). Only three collaborator families supported the oligarchs in 1434.⁴⁶

The Alberti faction of 1385–1400 was the last barrier of opposition to the revived patrician oligarchy (Brucker 1977, p. 75–102). However, apart from descriptions of the extremely wealthy Alberti themselves, who were papal bankers before the Medici replaced them as a result of the Alberti's 1393 exile (Holmes 1968; Foster 1985), almost no published information exists on the composition of this faction. We do know, however, that Acciaiuoli support for the Medici dated from the exile of Alberti supporter Donato Acciaiuoli (Brucker 1977, p. 97; Kent 1978, p. 59).⁴⁷ In addition, the close friends of Acciaiuoli who put up 20,000 florins as security for his exile included three Cavalcanti, Luigi Guicciardini, and Nicola di Vieri de' Medici (Brucker 1977, p. 29)—all later patrician supporters of the Medici.

In sum, while the evidence that historical continuity among Medicean patricians went back as far as the mid-14th century is very weak, the evidence for grounding our understanding of patrician support for the Medici in the events of the Ciompi revolution and its immediate aftermath is quite strong (albeit still only suggestive). Our data, merged with Cohn's, on neighborhood exogamy support the view that elite neighborhood solidarity dissolved in the decades following the Ciompi revolution.

⁴⁶ The Rinuccini and Salimbeni, along with the exiled del Bene and Scali, no longer figured prominently in Florentine politics.

⁴⁷ A close relationship between the Acciaiuoli and the Medici families, however, predated this period. In the mid- to late 14th century, an important client of the banker Vieri di Cambio de' Medici was Bishop Angelo Acciaiuoli, who played a major role in Florentine politics while occupying the city's episcopal see (Brucker 1977, p. 10). A marriage around 1405 consolidated this family relationship.

the data on patrician factional continuity supports the further view that structural isolation among Medicean patricians dates from this period as well.

—Oligarchic elite closure.—Establishing the existence of historical continuity, however important, is not the same thing as establishing the mechanism through which such continuity was created. A priori, there is no obvious reason that factional wounds could not have been gradually healed (perhaps under the goad of a massive external threat, like the Milanese war), that disaffected elites could not have been reabsorbed (under careful controls), or that the political system could not therefore have returned to its routinely tumultuous stochastic equilibrium. In reality, however, an irreversible "ratchet effect" appears to have occurred, which we need to explain.

In particular, we argue, elite marriage networks shifted permanently during the period from 1385 to about 1420 from a quasi-feudal pattern of parallel, intraneighborhood marriage hierarchies, which had incorporated most patrician families, toward a citywide elitist pattern of cross-neighborhood marriage cycles, which co-opted "politically correct" patrician families while structurally isolating patrician "class traitors" who had collaborated with the Ciompi and artisan guilds. The folding of a dense oligarchic core into itself (the rectangular set of blocks in fig. 2a) and the segregation of patrician Medici supporters from this core (the Guicciardini and Tornabuoni blocks in fig. 2a), in other words, were two sides of the same elite reconsolidation process.⁴⁸ The effect of this marriage transformation was to keep Ciompi-type challenges from ever arising again; no longer were there fluid elite factions to play off one another. The process is illustrated graphically in figure 3. The solid lines give a stylized portrait of the quasi-feudal pattern of parallel neighborhood hierarchies before the Ciompi.⁴⁹ As mentioned above, this marriage pattern originally derived, centuries before, from rural lord-retinue hierarchies transplanted to local city neighborhoods. During the late medieval interim, however, neighborhood hierarchies were sustained by a logic of status: enshrouded within overtly symmetric political alliance marriages,

⁴⁸ The shift from neighborhood to citywide patrician elites is exemplified in fig. 2a by the contrast between, on the one hand, the old Santa Croce hierarchical organization of Peruzzi→Castellani→Pepi and, on the other hand, the newer self-encapsulating organization of Guasconi→Strozzi→Panciatichi→Albizzi→Guasconi (and similar cycles).

⁴⁹ This portrait may conflate prematurely the Albizzi-Ricci factional underpinnings with earlier Guelf-Ghibelline and Black-White Guelf marriage structures, but no data exist at present to trace medieval stages of transformation, if any. With the new Carte dell'Ancisa marriage information currently being processed, we will be able to investigate this further.

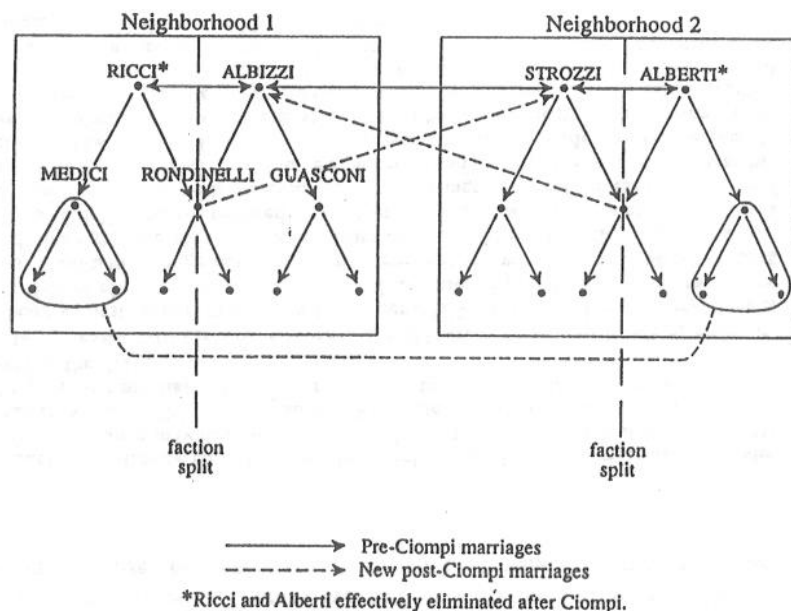


FIG. 3.—Mechanics of elite closure (1380–1420)

arranged by Florentine patriarchs,⁵⁰ was an implicit claim on the part of the family giving the dowried wife to be superior in status to the family receiving the dowried wife.⁵¹ The reasons for this were two: (a) culturally, in all ceremonial exchange or gift-giving systems, prestige accrues to the more (competitively) generous (Mauss [1925] 1967);⁵² (b) structurally, son-in-law relations often were the raw material for constructing political lieutenants (Kent 1978, p. 55).⁵³

³⁰ Needless to say, modern conceptions of romance are anachronistic in this deeply sexist context. Patrician fathers arranged marriages between sons around 35 years old and daughters in their teens (Herlihy and Klapisch-Zuber 1985).

⁵¹ This combination of implicit domination enshrouded in a cultural veneer of friendship is typical of patron-client relations.

⁵² This also fits with the Catholic principle of plenitude, or grace—the ideological foundation for European nobility (Lovejoy 1936; Duby 1980).

³³ This potential could be actualized most easily in two circumstances: (a) when the son-in-law came from a small disorganized clan, in which therefore the potentially countervailing father of the son was weak, or (b) when the son-in-law was a "black sheep" for whatever reason. Examples of both cases can easily be found in the *Medd* party.

Because of intense status competition, wife-giving families could not take back daughters from their wife-receiving affines without thereby relinquishing their claim to superiority. *Gonfalon*i neighborhoods in particular were strongly bounded hothouses, in which frequencies of both interaction and status rivalry were high (Weissman 1982; Kent 1977). Add asymmetric marriage to bounded neighborhoods, and the result is the network pattern drawn in figure 3: hierarchical linear trees or "pecking orders."⁵⁴

Medieval factions were driven by local neighborhood antagonisms at their root, even when they aggregated under broader pope-versus-emperor banners (Waley 1969, p. 203). This is shown in figure 3 by factional splits between rival lords within each neighborhood. The factions link up, in geographical checkerboard fashion, across neighborhoods (cf. Barth 1959).⁵⁵ The medieval dynamic at this point was that things eventually would explode, with top leaders of the losing side suffering exile, expropriation of wealth, and burning of homes. After a rocky period of probation, however, losing lieutenants and those lower down slowly would be reabsorbed back into the system through asymmetric marriage (since new local challengers in the old winning faction reached to them for support).

The Albizzi-Ricci feuds of the mid-14th century, we argue, were just this sort of traditional medieval factional affair, except for one catastrophic complication: The Ciompi working-class revolt threatened the elite in toto, which suddenly was confronted with mass exile. Ricci partisans and, even more, patrician sympathizers with the Ciompi (like the Medici) now were not just normal elite from a losing faction; they were class traitors in a very direct and deep sense. Resurgent oligarch consciousness was seared by the Ciompi event to a degree that it structured both polemics and virtually every domestic institutional reform for decades (Brucker 1977; Najemy 1982).

After the oligarchs' return to power in 1382, the reverberating consequences for intraelite marriage networks were profound.

1. Class traitor patrician sympathizers with the Ciompi were shunned in marriage by victorious oligarch families. This is the source of the

²⁴ Of course, top-level lords also had to get wives from somewhere. Inability to accept daughters from below, within their neighborhood, forced them to trade among themselves, across neighborhoods, but only at the very top. Some neighborhood bosses were prestigious enough to obtain wives from outside the city.

That is, each local faction was surrounded by its enemies. The aggregation logic here is balance theory: "[neighboring] enemies of my [neighboring] enemies are my friends."

structural barrier to marriage between the oligarchs and the Guicciardini and Tornabuoni Medicean blocks, observed in figure 2a. To see the dynamic of how this came to be, refer again to figure 3: (a) Ricci and Alberti families were effectively expunged from the diagram, the normal consequence of being leaders of losing medieval factions. (b) This left losing and now leaderless lieutenant families, such as the Medici, structurally isolated and cut off from their victorious neighbors. (c) Cross-pressured "swing-vote" families, such as the Rondinelli, who might be potential bridges for reintegrating the losers, were temporarily left hanging. But (d) marriage ostracism of patrician losers by victorious oligarchs was exceedingly intense and vengeful.

This last assertion is not mere hypothesis. When the Alberti males were finally banished in 1397, virtually no one would marry them (Foster 1985, p. 321). Before that, in 1394, the very prestigious moderate, Filippo Bastari, was sentenced to perpetual exile merely for trying to talk Rinaldo Gianfigliuzzi into changing his mind about withdrawing from a marriage agreement with the Alberti. Gianfigliuzzi had withdrawn from the Alberti agreement in the first place because of pressure he had received from Maso degli Albizzi (Brucker 1977, pp. 95–96).⁵⁶ This prominent example apparently was taken to heart, and routinized into marriage maxims, by the patrician rank and file desirous of advancement within the new regime.⁵⁷

2. Not only were Ciompi sympathizers shunned, however, but oligarchs themselves were restructured by their vengeful ostracism: cross-

⁵⁶ Such cross-family consultations about politically significant marriages involving only one of them may have been common. Kent (1978, p. 130) cites a much later 1431 case of Almanno Salviati's consulting Averardo de' Medici, his father-in-law, about the proposed marriage of Salviati's daughter to a Frescobaldi. (Averardo apparently okayed the deal.)

⁵⁷ In the early 15th century, Giovanni Morelli wrote as follows in his memoirs, intended as posthumous instruction for his sons: "[When you decide to marry] think of this first of all: don't demean yourself with an inferior person; try instead to improve your condition, though not to such an extent that she would want to be the husband and make you the wife. . . . Aside from being of old stock in the city, they should also be Guelfs who are honored by the Commune and who are free of all stains, such as those associated with treason. . . . In marriage, connect yourself with a Guelf family in government; it ought to be a powerful and trusted family, free of all scandal" (cited in Martines 1963, pp. 58–59). According to Martines, Morelli was particularly sensitive about this subject because he himself had made the mistake of marrying into the Alberti. "According to Morelli's testimony, this marriage hurt his career in public life, undermined his contacts, and left him exposed, during a period of twenty years, to tax rates aimed at his ruin" (Martines 1963, p. 59; we thank Samuel Cohn for suggesting the relevance of Morelli's memoirs).

neighborhood marriage cycles began to form.⁵⁸ A dense, citywide elite was created thereby, which transcended its earlier neighborhood base.⁵⁹

The short-term motivation for cross-neighborhood marriage cycles, we argue, was co-optation, especially of potentially bridging swing-vote families, such as the Rondinelli in figure 3. Oligarchs wanted the doors completely slammed in traitors' faces, without leaving open the traditional route for rehabilitation. And they certainly did not want to give patrician outcasts any network room to pluck away wavering supporters from themselves.

The complication was the status implications of intermarriage, mentioned above. "Big cheese" families could not reach down to, and accept daughters from, middling swing-vote patricians in the same neighborhood, without at the same time jeopardizing their own status positions in the local pecking order. But other prominent oligarch families, outside the neighborhood, could do so without disrupting either local neighborhood order. Given the decline in neighborhood intermarriage because of the ostracism, moreover, there was a demographic push to do just that. Cross-neighborhood co-optative daughter flows are illustrated as dotted lines in figure 3. Marriage cycles are the straightforward, even if unintended, result.

Since this co-optation process was occurring in all neighborhoods simultaneously (the consequence of the checkerboard pattern), the oligarchic elite as a whole closed in on itself: given the unexpected windfall of exogamous marriage into the truly elite, patricians of moderate position had fewer daughters available to send down. But this new cross-neighborhood elite was far more expansive and inclusive in status than had been the earlier medieval pattern of a federated alliance of neighborhood bosses: because of co-optation, the truly elite had fewer sons available to trade among themselves. The net result was the rectangular clique of oligarch blocks in figure 2a.

3. A final consequence was cross-neighborhood intermarriage among structurally isolated class traitor patricians. Given successful co-optation of swing votes into the reconsolidated elite and their own geographical scatter, outcast patricians were left with very few status-appropriate mar-

⁵⁸ From a network perspective, triadic cycles cause networks to fold into themselves, thereby creating clear "group" boundaries. Understanding how cyclic marriage triads formed, therefore, is the microbehavioral essence of understanding how the reconstituted patrician elite congealed.

⁵⁹ Civic humanism, a 1400–1430 ideology of citywide elites, arguably was built on top of this new elite marriage network foundation, even as it was catalyzed more proximately by 1390–1402 wars with Milan (Baron 1966).

riage options in their own neighborhoods. (We have argued, of course, that that was precisely the point.)

This left such patricians with two marriage options. (a) They could start to accept daughters from lower social groups. But this moved patricians down to the new men's status level, in other patricians' eyes.⁶⁰ (b) Alternatively, they could start to marry fellow isolates outside the neighborhood. This at least preserved their claim to status, even if it did nothing to restore power. For outcasts who wanted to remain patricians, this extraneighborhood marriage game was the only game in town. Hence, even though exogamy rates were increasing for all, intrapatrician exogamy rates were higher among outcasts than among oligarchs: Oligarchs married both outside and inside the neighborhood.

In short, this is how we claim the outcast Medici discovered their "leading edge" and highly consequential marriage strategy. Near exclusive intermarriage with patricians outside their own neighborhood was a network strategy forced on the Medici by the resurgent oligarchs' successful blockage of Medici marriage with their San Giovanni patrician neighbors. The half of the Medici party that was based on marriage was "chosen" by the Medici family only in the sense of positional chess: oligarchs structurally induced their choice.

Thus, the oligarchic clique and the Medicean spoke marriage networks were not two separate party organizations, later to butt heads as autonomous units. They emerged in tandem, as a single network, each reflexively and asymmetrically structuring the other.⁶¹

Data on change in elite marriage strategy over time.—We still have not shown how the Medici themselves, alone among patrician outcasts, eventually came to marry into the oligarchy. But before we solve this final puzzle, let us present evidence in support of the above account.

We have attempted to date the 162 marriages in our data set, which span the period from about 1395 to 1434. Fifty-three of these marriages are precisely dated by Kent in her book. For 84 of the remaining 109 marriages, we have been able to estimate the decade of the marriage, usually through triangulating the known dates of relatives with genealogical information contained in Florentine names.⁶² Because of this estima-

⁶⁰ This is not to say that patricians never would do this—say, for money. But wealthy dowries from new men daughters were always implicitly purchased at the cost of lowered prestige. The dowry money was tainted, a sign of patricians on hard times.

⁶¹ Padgett (1990, p. 450) develops a similar "reflexive structuring through mutual contestation" argument in a totally different empirical context, that of professionalism and plea bargaining in U.S. criminal courts.

⁶² Florentine names usually include the father, and frequently the grandfather, in them—e.g., Cosimo di Giovanni di Bicci de' Medici. This is yet another indicator of the Florentine concern with patrilineage.

TABLE 12
ELITE MARRIAGES OVER TIME

Neighborhood by Estimated Date of Marriage	Overall	1395–1410	1411–20	1421–29	1430–34	No Date
Medici marriage strategies:						
San Giovanni.....	4 (.143)	0	0	3	0	1
Santo Spirito	10 (.357)	1	2	3	4	0
Santa Maria Novella	9 (.321)	2	4	2	0	1
Santa Croce.....	5 (.179)	2	1	2	0	0
Total	28					
Peruzzi + Ricasoli + Castellani marriage strategies:						
San Giovanni.....	10 (.345)	2	3	1	3	1
Santo Spirito	5 (.172)	0	1	0	4	0
Santa Maria Novella	6 (.207)	3	1	1	1	0
Santa Croce.....	8 (.276)	4	0	1	3	0
Total	29					
Strozzi + Gianfigliuzzi marriage strategies:						
San Giovanni.....	11 (.344)	4	2	1	2	2
Santo Spirito	6 (.188)	2	0	0	3	1
Santa Maria Novella	9 (.281)	4	2	1	1	1
Santa Croce.....	6 (.188)	3	1	0	2	0
Total	32					
Albizzi + Guadagni marriage strategies:						
San Giovanni.....	13 (.591)	2	5	5	0	1
Santo Spirito	4 (.182)	2	0	1	1	0
Santa Maria Novella	3 (.136)	3	0	0	0	0
Santa Croce.....	2 (.091)	0	1	0	0	1
Total	22					

NOTE.—Values in parentheses are percentages of total.

tion procedure, table 12 contains measurement error, which will be reduced through ongoing archival work. For our purposes, however, these best estimates are sufficient to reveal broad trends in strategic behavior of the elite.

Table 12 presents, for the leading elite families in various quarters, the number of their marriages into families in all other quarters (including their own), broken down by decade. The Medici lived in the western portion of San Giovanni; the rival but intimately connected Albizzi and Guadagni lived in the eastern half. The Peruzzi, Ricasoli, and Castellani were leaders of Santa Croce, as already mentioned. And the Strozzi and

Gianfigliuzzi were the most prominent families in Santa Maria Novella. No family in Santo Spirito had a volume of marriages high enough to warrant inclusion in this table.

If one looks first at the overall figures, what is most striking about these data is the fact that all of the most prestigious oligarch families intermarried at the highest rate with patrician families in San Giovanni—the Medici's own homeland. We have already established that the Medici themselves married at very low rates into their own neighborhood. We now have a better sense of why: they were surrounded by patrician enemies (Kent 1978, p. 170) whom the oligarchs already had successfully wired into themselves. The more detailed timing data also support this conclusion: the oligarchs were active in the 1395–1420 period in establishing marriage links with San Giovanni, during which time the Medici made not a single marriage (in our data set at least). Apparently, the oligarchs were quite aware of the potential for trouble from this quarter (also home to the Ricci) and took active steps to contain it at its source.

The case of the Rondinelli, mentioned above as a swing vote, illustrates the oligarchs' strategy more precisely. In the 1340s the Medici, the Rondinelli, and the della Stufa had formed a San Giovanni clique, apparently of the traditional sort (Kent 1978, p. 65). As late as the 1370s, the Rondinelli were active, along with a portion of the Medici, in the Ricci's San Giovanni faction (Brucker 1977, pp. 34, 125). Hence, the Rondinelli were prime candidates for neighborhood intermarriage with the Medici and for pariah status. However, an early wife-giving marriage with the Strozzi (themselves split between Albizzi and Ricci factions), followed by both types of marriage with the Guasconi (who themselves furnished an early wife to the Strozzi) apparently saved them from ostracism and turned them into avid oligarchs. In this manner, the Strozzi dissolved the Medici's local patrician clique.

In addition to such innovative cross-neighborhood raiding into the Medici's base by the Santa Maria Novella and the Santa Croce elites, the data reveal that the Medici's San Giovanni heartland was being squeezed in a traditional way. For reasons we do not know, from 1410 on, the old-line Albizzi and Guadagni retreated to an old-fashioned but successful neighborhood consolidation strategy. This retreat made them less integrated into the elite than one might suspect from their stature (cf. Kent 1978, p. 177). But it also made it harder for the Medici to rebuild their own local patrician base.

So far, the data are consistent with our expectations. In addition to this (albeit loose) confirmation, however, the data contain a surprise. The oligarchy worked so hard on controlling San Giovanni that they apparently overlooked the "older suburb" quarter of Santo Spirito (that

is, until the 1430s). Perhaps this was a simple and traditional oversight on their part, based on the slightly less prestigious character of this district; but we suspect that the overemphasis on San Giovanni, relative to Santo Spirito, was at least partly a conscious allocation of scarce marriage resources.⁶³

In any event, this oversight represented a clear "structural hole" within the oligarchic marriage network, which the data reveal the Medici to have exploited—at first gradually, but then with a vengeance, as they incrementally but clearly learned about the political potential in Santo Spirito: by the early 1430s, 100% of the Medici's own marriages were directed to this quarter. Three of every four of these late Medici marriages were wife-receiving rather than wife-giving—an indication that the Medici by this point were not particularly picky about relative status claims. One of these wife-receiving marriages was with the Guicciardini, a family fairly well integrated into the elite, in order to reinforce an old marriage alliance under siege.⁶⁴ But all the others (with the Corbinelli, the Corsini, and the Ridolfi) fit the classic Medicean pattern of marriage to patrician structural isolates.

The oligarch families apparently were not fools, and so moved quite late to repair this breach in their own defenses. As was the oligarchs' wont, all of these Santo Spirito marriages in the 1430s were to old-line families, already well integrated into the Florentine marriage network, albeit not at the highest levels. Thus, the late but intense mobilization of Santo Spirito patricians, by both sides, followed in microcosm the same pattern as that found in the global blockmodel—successful Medicean mobilization of structurally isolated patricians, and successful oligarchic co-optation of fairly well integrated patricians.

It may be of more general interest to pause here for an observation about the apparent microbehavioral decision processes revealed in these data. This sequence of structural holes, created in the first place by active elite attention focused elsewhere and then exploited gradually but surely by opponents, suggests more than anything that elite tactics evolve not as part of interacting sets of omniscient "grand strategies," à la game

⁶³ Santo Spirito, located across the Arno river (on the "other side of the tracks"), originally was more like an old suburb than a part of the city's geographical core (Weissman 1982, p. 6). It was the heart of the Ciompi wool workers' district. This hardly implied that the quarter contained nothing but workers and new men—after all, many old magnate families resided there. But it does imply that the elite of this quarter were somewhat less densely integrated by marriage (though not economics) into themselves and into other neighborhood elites.

⁶⁴ The Peruzzi also arranged a marriage with the Guicciardini, in 1434, in an apparent effort to induce the Guicciardini to switch sides. The net effect of these offsetting moves was a Guicciardini family split in its partisan loyalties.

theory, but rather as a mutually adaptive learning process (Lave and March 1975).

Florentine families were extremely shrewd and opportunistic, but nonetheless they were always engaged in boundedly rational local action dictated by their own deep embedding through networks in localistic and highly idiosyncratic circumstances. Any complicated and endogenous marriage system presents each actor with narrow and changing opportunities, derived like vacancy chains (White 1970) from the actions and inactions of others in other arenas. Yet no one, not even Cosimo de' Medici, possessed the clear global overview of figure 2a. Everyone looked out at elite structure egocentrically from the vantage point of his or her own network location. This conclusion is not to doubt that families learned, and often shrewdly so, but to question the plausibility of historical explanations that place much weight on Machiavellian foresight and planning, especially in tumultuous times (cf. Skocpol 1979, pp. 14–18).

The Medici's own structurally anomalous position.—Finally, we need to explain: Given a global predisposition to form parties, why the Medici in particular as leaders of that party? After all, given the success of their opponents' control strategy against them, and especially given the depth of their involvement in previous discredited regimes,⁶⁵ the Medici emergence to take over the state in 1434 would seem, from the perspective of 1400, to be little short of miraculous.

One possible explanation might be the Medici bank, founded on ties with the pope. But this is not convincing. As a "cash cow" generator of personal wealth, which the Medici used both for personal patronage (Molho 1979) and for city loans (Molho 1971, p. 168), the role of the bank is clear. However, an identical economic position did not save the Alberti, who were the pope's primary bankers before their exile. And the Medici bank as an institution (not just as a generator of wealth) was useless for political mobilization: apart from the fact that not many fami-

lies were involved, the bank was heavily infiltrated with oligarchic partners and employees (particularly the Bardi, but also the Guasconi and della Casa), later purged (de Roover 1966, p. 56).

A better answer, we believe, has to do with the Medici's own anomalous or structurally contradictory position in the patrician networks. They were the only major Florentine family to span the structural chasm created by elite closure and to participate simultaneously in the two disarticulated patrician worlds. (Refer to Medici links to the Guasconi and Albizzi blocks in figure 2a.) To understand this oddity, we need more information on the Medici's own, rather peculiar, family history.

Brucker's article (1957) on the 14th-century Medici makes it clear that the Medici were hardly a mercantile banking family throughout most of their history. On the whole, they were a rather violent and lawless bunch—*popolani* imitating magnates. Only Vieri di Cambio engaged in banking, and even then the Medici economic fortunes did not really begin to rise until Giovanni de' Medici used the remnants of Vieri's firm to capture the pope's business from the discredited Alberti (Holmes 1968). Perhaps in part because of his relative Salvestro's Ciompi exploits (see n. 65), Giovanni himself assiduously avoided politics throughout his lifetime (1360–1429) and tried to talk his sons, Cosimo and Lorenzo, into the same course (Machiavelli 1988, p. 161).

More particularly, Machiavelli describes (on the basis of earlier chronicles) two incidents that may account for how the Medici avoided utter, rather than just heavy, ostracism after 1382.

In 1393, immediately after the Alberti were finally banished by the Albizzi oligarchs, a crowd of guildsmen and *popolo minuto* ran to the house of Vieri di Cambio, who was left head of the Medici clan after the death of Salvestro in exile in 1388. According to Machiavelli (1988, pp. 139–140), this crowd implored Vieri in the name of Salvestro to lead a pro-Alberti revolt to topple the oligarchic regime. Vieri's kinsman Antonio also urged Vieri to commit the Medici to immediate revolt. However,

Going among them in the piazza and from there into the palace, he said before the Signoria that he could not in any mode regret having lived in such a manner that the people of Florence loved him, but that he regretted very much the judgment that had been made of him, which his past life did not deserve. . . . He therefore begged the Signoria that the ignorance of the multitude not be imputed to his sin because, as far as he was concerned, as soon as he could he had put himself in [the Signoria's] power. . . . After these words, Messer Vieri returned to the piazza and joined his followers with those who had been led by Messer Rinaldo [Gianfigliuzzi] and Messer Donato [Acciaiuoli]. . . . He begged [the mob] to put down their arms and obey the Signoria [which they did]. [Machiavelli 1988, p. 140]

⁶⁵ Salvestro di Alamanno de' Medici was the forceful, and somewhat demagogic, leader of the campaign against the Parte Guelfa that triggered the Ciompi revolution (Brucker 1962, chap. 8). For this role, and his subsequent leadership, he was the Ciompi's hero. On the very day of their street triumph, as patrician houses burned, the Ciompi "mob" knighted Salvestro for his services to the *popolo*. Other Medici followed in Salvestro's footsteps, through their heavy involvement with the Alberti faction. In 1397, shortly after the 1393 downfall of the Alberti, Bastardino de' Medici (along with Maso de' Ricci) was executed for attempting to assassinate Maso degli Albizzi and Rinaldo Gianfigliuzzi and thereby to overthrow the regime (Brucker 1977, p. 100). In 1400, the Medici were involved in another such conspiracy and assassination attempt, with the result that the entire Medici family (along with the Alberti and Ricci) were excluded from holding public office for 20 years. Actions more anathema to the oligarch regime can hardly be imagined.

Much later, in 1426, Giovanni de' Medici behaved in much the same way, although a change in who initiated the action reveals how far roles had altered in the interval. Rinaldo Albizzi came to Giovanni to ask him to join his faction of oligarchs in their efforts to disenfranchise new men (about which more below). He refused, saying that he opposed factions of any sort.

These things, so dealt with, were learned of outside and brought more reputation to Giovanni and hatred to the other citizens. But Giovanni sought to detach himself from this so as to give less spirit to those who might plan new things under the cover of his favor. . . . Many of those who followed his part were malcontent at this because they would have liked him to show himself more active in things. Among these was Alamanno de' Medici [son of Salvestro], who was fierce by nature and did not cease inciting him for his coldness and for his mode of proceeding slowly, which, he said, was the cause of his enemies' dealing against him without respect. . . . Inspiring him also in the same way was his son Cosimo. Nonetheless, Giovanni . . . did not budge from his position. [Machiavelli 1988, p. 156]

In other words, throughout the decades following the Ciompi revolt, the leaders of the Medici clan tried hard to distance themselves from their more fractious relatives and to reestablish their family within the conservative oligarchic regime. Not only that, they went out of their way to keep the lid on trouble. As the Machiavelli accounts make clear (see also Martines 1963, p. 55), this docile political behavior did not expunge the pro-new-men image that the Medici name had in the popular mind. But, for their role in squelching discontent, the oligarchs apparently were begrudgingly grateful.

Even so, it was not until the 1420s that the oligarchs relented and began to co-opt the Medici through marriage cycles. Except for marriages with the Bardi, all of the marriages between the Medici and the oligarch blocks in figure 2a were recent.⁶⁶ This readmission of the Medici into elite circles was just what the cautious Giovanni had struggled for all his life. But what would have worked splendidly with the older generation of Vieri and Giovanni was too late for the fractious Young Turks Cosimo and Lorenzo di Giovanni and their cousin Averardo di Francesco. Events sketched in the next section led the die to be cast.

Thus, we lay at Vieri di Cambio's doorstep the explanation of the structurally anomalous position that the Medici house held in 15th-

century patrician marriage networks. Giovanni followed up Vieri's abject plea with exemplary circumspection, but it was the defusion of popular rebellion by Vieri di Cambio, we argue, that saved the Medici name in oligarch eyes.⁶⁷

Even so, oligarchic acceptance of Giovanni de' Medici, however delimited, suspicious, and constrained, did not occur without a debate. "Niccolo da Uzzano did not fail to alert the other citizens [about the political inclusion of Giovanni di Bicci] by pointing out how dangerous it was to foster one who had such a reputation in the generality of people, and how easy it was to oppose disorders in their beginnings, but how difficult it was to remedy them when they were left alone to increase; and he recognized in Giovanni many parts superior to those of Messer Salvestro. Niccolo was not heeded by his peers because they were envious of his reputation and desired to have partners in defeating him" (Machiavelli 1988, p. 148).

The Dynamics of Party Formation: New Men Economic Ties

We shall now sketch, in exceedingly brief compass because of space limitations, the 1420s and 1430s Medici mobilization, through economic ties, of the second half of their party—the San Giovanni new men. In this reconstruction, we rely heavily on hard-earned data and interpretation in Molho (1971), Brucker (1977), and Kent (1978). The Milan and Lucca wars of 1424–33, we shall argue, were the short-term catalysts that galvanized San Giovanni new men into support and triggered, thereby, self-consciousness of the Medici as party. The argument in brief is as follows:⁶⁸

The Milan and Lucca wars triggered tax extraction of such magnitude that entire family patrimonies, both of patricians and of new men, were being destroyed. This set off a frantic scramble, among everyone, to escape ruinous tax assessment.

Taxes were levied administratively by neighborhood; thus, fiscal crisis revived the politics of neighborhood. Neighbors looked to neighbors to gain leverage on other neighbors who allocated assessments through rotating offices.

Further evidence of this is the fact that only the descendants of Vieri were exempted from the oligarchs' blanket proscription of the Medici clan in 1433 (Kent 1978, p. 25).

Readers interested in documentation of the claims herein can write the authors for an earlier draft of this paper. We have chosen to respond to page limitations by drastically shortening this section on new men, because the argument in this section is primarily a synthesis of secondary sources.

⁶⁶ The early 1420s period of this co-optative marriage behavior is quite narrow, so the volume of evidence is not overwhelming. But what we have in mind here are the 1420s wife-giving marriages with Luca di Maso Albizzi (after the death of his father), with the Gianfigliuzzi, and with the Barbadori—in other words, with the Albizzi block of figure 2a. In addition, there was a wife-receiving marriage with the Guasconi.

Administrative assessment procedures could more easily uncover fixed assets like real estate than liquid assets like cash and business investments. Patricians went on the legislative offensive to squeeze more offices and taxes out of mercantile new men.

New men responded initially by banding together in parish-based secret societies: the religious confraternities. While not class homogeneous, this corporate form was a first step toward organized class solidarity and resistance.

Oligarchs responded with vicious and successful repression. Abolition of confraternities left new men bereft of coordinated local neighborhood support from each other.

New men responded in the only way left: supplication of local neighborhood patrician patrons for help. But successful mobilization of patricians for class repression had locked in most oligarchs against responding to appeals from below. The enforcement mechanism behind this coordinated class rejection of new men was the dense marriage network analyzed above.

The Medici were the only exception: their structurally contradictory position within elite marriage networks gave Giovanni and Cosimo the truly discretionary choice of responding or not to pleas from San Giovanni new men. Giovanni de' Medici, late in his life, responded to Rinaldo Albizzi's explicit request to join him in repression in the manner described in the quotation from Machiavelli above. In the sharply polarized context of the time, the hotheaded Rinaldo probably took Giovanni's equivocal response as throwing down the Ciompi (or at least new men) gauntlet. Henceforth (after 1426), the Medici family was severed from budding oligarchic co-optation and was now afloat as a distinct political faction.

San Giovanni new men received patronage, through economic ties, from their neighbors the Medici, but other new men did not, from the Medici or any other source.⁶⁹

Therefore, we believe that the surge of supplication from San Giovanni new men during the Milan war is what triggered Medici self-consciousness of themselves as a political party (as opposed to just an outcast family struggling desperately to regain admittance to the club). Oligarchs funneled new men's support to them and then cut off any possibility of equivocating response. Certainly, the first evidence of intentional and coordinated Medici manipulation of elections dates from 1427, right after this period.

⁶⁹ Hence, the 1434 peak of newly admitted families is only one-fourth as large as the historical average. See fig. 1.

NETWORK IDENTITIES

Robust Action

With these analyses of Medicean party dynamics in hand, we are now in position to understand the structural preconditions for robust action. We can only assume that Cosimo learned sphinxlike behavior at his father Giovanni's knee, and then adapted that to revolutionary circumstances. The strategy certainly was not unknown in Florence (Weissman 1989). But robust action is not just a matter of behaving ambiguously. Others are too shrewd not to see through behavioral facades down to presumed self-interested motivations. To act credibly in a multivocal fashion, one's attributed interests must themselves be multivocal.

Within the Medici party itself, the structural underpinnings for contradictory attributions of "Medici self-interest" are clear. The Medici were heroes of the new men not just because they inherited the historical legacy of Salvestro d'Alamanno. They did sponsor a few San Giovanni families of new men, quite unlike their oligarch opponents. And, after Giovanni spurned Rinaldo Albizzi's class alliance request, oligarchs heaped the scornful opprobrium of that label on Medici heads in a polemical effort to whip up patrician fury. At the same time, the Medici's deep patrician roots were clear enough to those whom they married. One can easily imagine Medicean patrician supporters knowingly winking at each other on hearing the public charges of favoring the new men that swirled around their in-laws. Such patricians' hatred of the oligarchs ran deep, and "everyone knows that tactical alliances are sometimes necessary to reestablish an old regime." After all, it would not be the first or last time in Florentine history that the new men had been sold down the river.

Which attribution was true? Plausible evidence could be assembled for either view, but new men and patrician supporters of the Medici hardly ever had the opportunity to get together privately to compare contradictory notes. Even if they had, trust between them was so low that neither should have believed a word of the other. Robust action by the Medici was credible precisely because of the contradictory character of their base of support.

Descending to more micro levels does not help to clarify attributions. Everyone knew that the Medici wanted, as bankers, to make money; as families, to increase prestige; as neighborhood patrons, to amass power. But which of the goals (which really are roles) was in play when? Given fixed role frames, self-interests (and attributions) are clear, but in complicated chaos like the Milan and Lucca wars the games themselves are all up for grabs. Rational choice requires a common metric of utility for

footing, but revealed preferences (the basis for inferring trade-offs across goals/roles) only exist post hoc.

A Medicean goal of taking over the state can be inferred from the historical record, but only after their choice already had been narrowed to that or exile. Before that, the Medici appear to have been traditional incrementalists, trying only to worm their way back into oligarchs' good graces. Yet, at the level of sphinxlike style, it is not at all clear that Cosimo and Giovanni were any different. Both were shrewd and multivocal opportunists, pursuing openings whenever they presented themselves. Clear goals of self-interest, we conclude, are not really features of people; they are Florentine (and our) interpretations of varying structures of games.

Legitimacy

Besides multivocal placement in contemporary conflict, however, there was a second dimension to Medicean robust action. Not only has Cosimo been remembered in history as a Machiavellian deep thinker, but also at his death he was legally enshrined as *pater patriae*, father of his country, by his contemporaries (cf. Schwartz 1983). The very ambiguity of his placement in self-interest somehow became elevated, in the public mind, into the essence of public interest.

This transposition from hero of the new men to Solomonic sage, we believe, can be understood by returning to those Florentines who have remained on the margins of our account so far—the political neutrals. Cosimo never beat the oligarchs in pitched battle; he was recalled from Venetian exile in public triumph, as savior of the republic.⁷⁰

The key is the cognitive category "oligarch." After all, when the oligarchs were firmly in control, they were not labeled "oligarchs"; they were republican "public citizens of the state." Loss of legitimacy and Medici victory are what got them their pejorative tag. No longer public spirited and selfless in attribution, they came to epitomize class self-interest in Florentine eyes.

How did this delegitimizing change in attribution come to pass? Our answer, basically, is positional chess. The Medici themselves never slung "oligarch" mud back into oligarch eyes. As mentioned in the introduction, Cosimo never said a clear word in his life. Instead, others—new men and eventually political neutrals—were the agents of active tactical slashing.

The sequence went like this: As already described, the fiscal crisis of

the wars repolarized social classes and tempted oligarchs into a successful (in the short run) repression campaign. This campaign earned them their label in new men's eyes. However, as Kent (1978) makes clear, the oligarchs' attack was not just a rash tilt at windmills, based on lack of sophisticated foresight. Oligarchs' ability to control the legislative process (especially the colleges), and therefore to attain their goals peacefully, had been hindered recently by the network tentacles of the duplicitous Medici faction. Medicean latent appeal to new men and heterogeneous control of some offices gave them swing-vote influence out of proportion to their numbers—even though legislatively all they did was block. In the context of vanishing patrician patrimonies, however, mere blockage was sufficient to force oligarchs onto the offensive. Either they purged the opposition or else all their wealth would be gone.

Cosimo, in contrast, behaved in his typically reactive fashion of only responding to requests. He funneled a sizable portion of the assets of his bank into funding the state's short-term debt, for which he was rewarded with brief public office—member of the *Ufficiali del Banco*, from November 1427 to December 1428.⁷¹ The monetary catch was this: as incentive to grant such emergency loans, the state offered above-average short-term returns. Thus, while his opponents faced financial catastrophe, Cosimo actually may have made money.⁷² More to the point here, once Florence survived, Cosimo de' Medici took on the appearance of financial savior of the city (Molho 1971).

Knowing this, once the Lucca war had ended, the oligarchs moved quickly to send Cosimo, Lorenzo, and other Medici and lieutenants into exile in Venice (and elsewhere). In anticipation of this very move, Cosimo had shifted much of his wealth out of the city, away from potential expropriation, and used it to cultivate Venetian support (de Roover 1966, p. 54; Kent 1978, pp. 304–8). Oligarchic legitimacy was now in deep trouble. They still did not have enough control to purge sufficiently the *signoria* electoral bags,⁷³ so, when the lottery randomly produced too many Medicean officeholders (Kent 1978, p. 328), the oligarchy was forced to take desperate action. Rinaldo Albizzi sent out the word to

Even after Cosimo left this post, his supporters continued to dominate this financial nerve center (Molho 1971).

A number of oligarchs possessed as much, or almost as much, raw wealth as did Cosimo, but theirs often was not as liquid as his—a consequence of Cosimo's special ties to the pope.

The Florentines had an elaborate electoral system that involved electing candidates in bags, one bag for every class of offices. Offices were filled every two months by randomly drawing names from the bags and checking these against various legal restrictions. The whole republican purpose of the system was to make it hard for any faction to consolidate control. See Najemy (1982).

⁷⁰ The irony, of course, is that most historians regard Cosimo as the destroyer of republicanism (Rubinstein 1966).

assemble the troops in order forcibly to seize the Signoria, with the stochastic turnout consequences described above. Political neutrals joined the cry for Medici return, and Cosimo became in public acclamation the political as well as financial savior of Florence.

War of course was the *sine qua non*, but note that at each step of the way Cosimo's careful positional maneuvering forced or enticed oligarchs into offensive lines of action, which connoted private self-interest. These were clear, irrevocable, and hence foreseeable. The reactive character of his robust and multivocal actions gained for Cosimo the revolutionary the legitimizing aureole of protector of the status quo. Party transmuted into state.

CONCLUSION

We shall not summarize the arguments in this paper, except for this: state centralization and the Renaissance emerged from the grinding of tumultuous historical events, as these were filtered through elite transformation. Cosimo did not create the Medici party, but he did shrewdly learn the rules of the networks around him. Rather than dissipate this power through forceful command, Cosimo retreated behind a shroud of multiple identities, impenetrable to this day. These credibly imparted multivocal meanings to all his reactive actions. Robust discretion, in the face of unpredictably hostile futures, and Solomonic legitimacy, above the self-interested fray, were the intended or unintended (who knows?) consequences.

We close on this methodological note: to understand state building, we have argued, one needs to penetrate beneath the veneer of formal institutions and apparently clear goals, down to the relational substratum of people's actual lives. Studying "social embeddedness," we claim, means not the denial of agency, or even groups, but rather an appreciation for the localized, ambiguous, and contradictory character of these lives. Heterogeneity of localized actions, networks, and identities explains both why aggregation is predictable only in hindsight and how political power is born.

APPENDIX A

Blockmodeling Methods

We adopt correlation as our operational measure of structural equivalence, just as in CONCOR (White, Boorman, and Breiger 1976). A frequently used alternative measure, Euclidean distance (Burt 1976), gives weight to volume of ties as well as to pattern of ties (Faust and Romme

1985). In the current context, in which parties and class crosscut, this weighting unhelpfully differentiates elite from nonelite rather than one party from another. Unlike CONCOR, however, we prefer agglomerative to divisive clustering.⁷⁴

Thus, our method is to correlate columns of "stacked" matrices (and transposes), across all strong tie networks, and then to input the resulting correlation matrix into the standard Johnson's complete-link clustering algorithm.⁷⁵ This produced the partition of families given in Appendix B. To get the structural portraits of figures 2a and 2b, blockmodel images of social bonds among clusters were generated by (a) aggregating each raw network matrix according to Appendix B's clustering of families and then (b) defining and drawing a social "bond" whenever the number of raw network ties between clusters equaled or exceeded two.⁷⁶

Tables A1 and A2 address goodness-of-fit issues. There are two such issues: How well do the simplified blockmodels represent the more complex actual network data? How well does the blockmodel partition predict actual party memberships, as recorded in Kent? The first issue is assessed, in table A1, in two ways: (a) by the percentage of actual ties among families represented in figure 2's image bonds among blocks and (b) by correlations between raw data matrices and block mean densities, based on the partitions in Appendix B (Noma and Smith 1985).

All correlations in tables A1 and A2 are significant at the $P < .001$ level, according to the QAP procedure of Baker and Hubert (1981).⁷⁷

⁷⁴ The reason is the two procedures' differing treatments of structural isolates. We prefer to inhibit these "irrelevant" actors from contaminating our structural picture of relations within the core. (This does not mean that information on ties between central and isolated families is ignored in the discovery of the core. Such information already has been incorporated into the original correlation measure.)

⁷⁵ In addition to this computer output, we did one manual correction: we merged the Capponi/Busini block with the Strozzi solo block. This merger improved (marginally) goodness of fit. More important, Kent (1978, p. 184) makes a strong case for the structural equivalence of Strozzi and Capponi. In addition, it was clear (from comparing D. Kent [1978] to F. W. Kent [1977]) that we possessed only limited marriage and economic data on Capponi.

⁷⁶ Often, density percentages are used as cutoff criteria, instead of raw number of ties, as is the case here. The reason for our approach is that, with small block sizes, percentages are not robust: a single actual tie can mean as much as a 50% density.

⁷⁷ In the nonparametric QAP procedure (Baker and Hubert 1981), an empirical distribution of random correlations is generated by repeatedly permuting rows and columns of the raw data matrix and then correlating this with the fixed image matrix. In no case, out of about 1,000 trials, did any of our own simulated random correlations exceed .10. More formal parametric significance tests are rarely possible with network data, since the data grossly violate the "independent observations" assumptions of traditional tests.

TABLE A1

GOODNESS OF FIT OF BLOCKMODEL IMAGE TO RAW NETWORK DATA

TYPE OF RELATION	OVERALL			MEDICI	
	No. of Ties	Proportion of Ties in Image	Correlation with Block Means	No. of Ties	Proportion of Ties in Image
Marriage	161	.646	.492	28	.964
Trade	92	.674	.561	10	.800
Partnership	45	.556	.513	13	.846
Bank	13	.769	.415	10	.800
Real estate	22	.091	.378	5	.400
Subtotal*	333	.610		66	.848
Mallevadori	31	.194	.338	3	.000
Friendship	50	.360	.381	14	.714
Personal loan	89	.404	.408	25	.840
Patronage	36	.222	.389	21	.381
Subtotal*	206	.330		63	.619
Total	539	.503		129	.736

* The blockmodel partitions were derived from data on the first five of these relations only. Goodness-of-fit measures for the last four relations derive from the superposition of best-fitting partitions from the first five relations. All correlations are significant at the $P < .001$ level, according to the nonparametric QAP procedure (Baker and Hubert 1981), implemented in UCINET.

TABLE A2

GOODNESS OF FIT OF BLOCKMODEL PARTITIONS TO PARTY MEMBERSHIP

No. of Families	Medici Blocks	All Other Blocks	Elite Blocks	Nonelite Blocks
Mediceans	26	4	2	2
Split loyalty	2	10	6	4
Oligarchs	0	31	8	23
Neutrals	1	18	2	16
Proportion mobilized*	.966	.714	.889	.644
Proportion own party†	.958	.823	.737	.871

* % Mobilized measures relative recruitment of blocked families into any party; i.e., proportion mobilized = (no. of families - no. of neutral families)/(no. of families).

† % Own party measures relative partisanship of activists; i.e., proportion own party = (no. of families in own party)/(no. of families - no. of neutral families), with split families allocated proportionately.

Robust Action

Moreover, 50% of the total volume of ties,⁷⁸ 61% of marriage and economic ties (fig. 2a), and 33% of "political" and friendship ties (fig. 2b) are captured by the central tendencies in the blockmodel. Given that the blockmodel was derived from the strong tie marriage and economic relations alone, we were pleasantly surprised by the weak tie performance.

More particularly, it is clear that marriage and trading relationships are the primary driving forces behind this blockmodel portrait of the Florentine elite. In part, this is because of their high rates of inclusive success, but it is also due to the higher volume of data. Partnerships and especially bank employment relations were very important when they appeared, but they do not span much of the elite. Real estate relations essentially were irrelevant.

On the weak tie side, personal friendships and personal loans operated in large part within the framework of marriage and economic relations. *Mallevadori* and patronage relations, however, were not well predicted by marriage and economic ties.

The success with which the blockmodel predicts political partisanship, in the table A2, speaks for itself. Ninety-three percent of the families in the Medicean blocks were mobilized into the Medici party. Fifty-nine percent of the families in the non-Medicean blocks were mobilized into the oligarch party.

Considering that this blockmodel has been disaggregated to an average of 2.7 families per block, and considering that the average overall density of the nine historical networks here is an extremely sparse 0.7%, this is excellent performance.

TABLE B1

BLOCK MEMBERSHIPS: CLUSTERING OF CORRELATIONS OF MARRIAGE, TRADE,
PARTNERSHIP, BANK, AND REAL ESTATE RELATIONS

<i>Reggimento Family</i>	<i>Party*</i>	<i>Gross Wealth (Florins)</i>	<i>Date of First Prior</i>	<i>Neighborhood (Gonfalone)†</i>
Medicean blocks:				
MEDICI:				
Medici.....	Medici (5)	199,672	1291	41
Carnesecchi.....	Medici	42,316	1297	42
Berlinghieri.....	Medici	6,117	1365	22
TORNABUONI:				
Tornabuoni/				
Tornaquinci.....	Medici	121,310	Magnate	34
Salviati.....	Split loyalties (1/1)	29,964	1297	24
Serristori.....	Medici	56,675	1392	23
Giugni.....	Medici (3)	41,086	1291	24
Pecori.....	Medici	17,244	1284	42
Corsini.....		16,387	1290	13
Vecchietti.....	Medici	17,212	Magnate	34
GUICCIARDINI:				
Acciaiuoli.....	Medici	28,200	1282	31
Guicciardini.....	Medici	60,060	1302	12
Ridolfi.....	Medici	46,196	1290	13
Pitti.....	Medici (2)	9,676	1283	12
Corbinelli.....	Medici	58,955	1286	12
GINORI:				
Ginori.....	Medici (3)	34,831	1344	41
Martelli.....	Medici (8)	7,502	1343	41
DIETISALVI:				
Dietisalvi.....	Medici (2)	3,943	1291	41
Ciai.....	Medici	22,331	1389	41
DALL'ANTELLA:				
dall'Antella.....	Split loyalties (1/2)	18,437	1282	21
Bartolini.....	Medici	19,477	1299	42
ORLANDINI:				
Orlandini.....	Medici	11,012	1420	42
Lapi.....	Medici	5,303	1394	44
DAVANZATI:				
Davanzati.....	Medici (2)	19,887	1320	32
COCCO-DONATI:				
Cocco-Donati.....	Medici (2)	2,580	1376	22
Arnolfi.....	Medici	4,160	1318	42
Pandolfini.....	Medici	30,520	1381	43
VALORI:				
Valori.....	Medici	15,213	1322	43
del Benino.....	Medici	22,629	1345	13
Non-Medicean blocks:				
ARDINGHELLI:				
Ardinghelli.....	Oligarch	57,596	1282	32
da Panzano.....	Split loyalties (1/1)	...	1312	22

1314

TABLE B1 (Continued)

<i>Reggimento Family</i>	<i>Party*</i>	<i>Gross Wealth (Florins)</i>	<i>Date of First Prior</i>	<i>Neighborhood (Gonfalone)†</i>
DA UZZANO:				
da Uzzano.....		75,737	1363	11
Bucelli.....	Oligarch	20,394	1284	22
GUASCONI:				
Guasconi.....	Oligarch (3)	29,074	1314	41
Bardi.....	Split loyalties (3/5)	189,452	Magnate	11
Cavalcanti.....	Split loyalties (1/1)	50,122	Magnate	31
Pazzi.....	Medici	72,550	Magnate	43
RONDINELLI:				
Rondinelli.....	Oligarch	21,053	1296	41
Brancacci.....	Oligarch (4)	15,697	1317	14
Mancini.....		6,838	1284	22
ALDOBRANDINI:				
Aldobrandini.....	Oligarch	7,171	1307	34
Raugi.....	Oligarch	3,634	1304	21
PERUZZI:				
Peruzzi.....	Oligarch (8)	104,795	1283	23
Ricasoli.....	Oligarch (2)	36,178	Magnate	21
degli Agli.....		9,402	Magnate	42
CASTELLANI:				
Castellani.....	Oligarch (5)	61,696	1326	21
Spini.....	Oligarch	39,553	Magnate	32
Fagni.....		10,106	1295	23
PEPI:				
Pepi.....	Oligarch	2,865	1301	23
Doffi.....	Oligarch	12,700	1393	22
Morelli.....		27,535	1387	23
SCAMBRILLA:				
Scambrilla.....	Oligarch (2)	148	1387	21
Sertini.....		...	1376	34
BENIZZI:				
Benizzi.....	Oligarch (2)	9,672	1301	12
Manelli.....		16,421	Magnate	12
STROZZI:				
Strozzi.....	Oligarch (4)	296,250	1283	33
Capponi.....	Medici	54,027	1287	12
Busini.....		57,019	1345	23
RUCELLAI:				
Rucellai.....		54,968	1302	33
Baldovinetti.....	Oligarch (2)	9,831	1287	31
Sacchetti.....		29,092	1335	22
PANCIATICHI:				
Frescobaldi.....	Oligarch	28,898	Magnate	12
Panciatichi.....	Oligarch	151,542	Consular	42
Manovelli.....	Oligarch	13,438	1283	42
ALBIZZI:				
Albizzi.....	Split loyalties (1/2)	92,599	1282	43
Gianfigliuzzi.....	Split loyalties (1/5)	47,853	Magnate	32
Barbadori.....	Split loyalties (1/2)	98,663	1295	12
Belfradelli.....	Oligarch (2)	9,014	1321	12
Benivenni.....	Split loyalties (1/1)	1,811	1389	43

1315

TABLE B1 (Continued)

Reggimento Family	Party*	Gross Wealth (Florins)	Date of First Prior	Neighborhood (Gonfalone)†
ALTOVITI:				
Altoviti.....	Oligarch (2)	42,357	1282	31
del Palagio.....		8,676	1328	43
Corsi.....	Split loyalties (1/3)	26,588	1354	23
DELLA CASA:				
della Casa.....	Split loyalties (1/1)	31,069	1393	42
Adimari.....		45,689	Magnate	44
Serragli.....		63,866	1325	14
SOLOSMEI:				
Solosmèl.....	Oligarch (2)	5,757	1364	41
LAMBERTESCHI:				
Lamberteschi.....	Oligarch (2)	52,524	Consular	21
Baronci.....	Oligarch	12,251	1330	42
VELLUTI:				
Velluti.....	Split loyalties (1/1)	22,372	1283	12
Arrigucci.....	Oligarch	5,736	Magnate	42
BARONCELLI:				
Baroncelli.....		67,966	1287	21
Rossi.....	Oligarch	24,649	Magnate	44
GUADAGNI:				
Guadagni.....	Oligarch (5)	25,179	1289	43
BISCHERI:				
Bischeri.....	Oligarch	55,230	1309	44
Arrighi.....		23,499	1373	43
FIORAVANTI:				
Donati.....		26,099	Magnate	43
Scolari.....		12,074	Magnate	43
Fioravanti.....	Medici	19,501	1344	43
Miscellaneous (unblocked):				
Carducci.....	Medici (2)	28,909	1380	31
Fortini.....		30,645	1386	43
del Forese.....	Oligarch	4,220	1296	24
Bartoli.....	Oligarch	54,956	1345	32

* For Medici and oligarch parties, numbers in parentheses are numbers active, if more than one. For split loyalties, numbers in parentheses are, first, number of Mediceans and, second, number of oligarchs. Blank spaces indicate that there were no active partisans.

† For Santo Spirito quarter, 11 = Scala gonfalone, 12 = Nicchio gonfalone, 13 = Ferza gonfalone, 14 = Drago Verde gonfalone. For Santa Croce quarter, 21 = Carro gonfalone, 22 = Bue gonfalone, 23 = Lion Nero gonfalone, 24 = Ruote gonfalone. For Santa Maria Novella quarter, 31 = Vipera gonfalone, 32 = Unicorno gonfalone, 33 = Lion Rosso gonfalone, 34 = Lion Bianco gonfalone. For San Giovanni quarter, 41 = Lion d'oro gonfalone, 42 = Drago San Giovanni gonfalone, 43 = Chiavi gonfalone, 44 = Vaio gonfalone.

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12

WHARTON PHOTOGRAPHICS

GE Canada: Designing a New Organization

At the beginning of the decade we saw two challenges ahead of us, one external and one internal. Externally, we faced a world economy that would be characterized by slower growth with stronger global competitors going after a smaller piece of the pie. Internally, our challenge was even bigger. We had to find a way to combine the power, resources and reach of a big company with the hunger, the agility, the spirit and the fire of a small one.

(John F. Welch, Jr.,
Chairman and CEO
General Electric Company)¹

Ed Johnson, head of Pooled Financial Services-GE Canada, studied the results of the attitude survey of the employees in his organization. Over the past three years he had led the redesign of GE Canada's financial, administrative, facilities and information technology services from a decentralized, hierarchical organization to a centralized organization composed of self-managing teams. Two organization levels and approximately 40% of the employees were eliminated while the productivity of the group and the quality of the work had improved. The goal of the redesign was to develop an organization that combined the economies of scale and resources of a large company with the flexibility, creativity and motivation of a small and entrepreneurial one. As Johnson studied the survey results, he saw clearly the positive gains that had been achieved and the areas where he needed to focus more attention. He recognized that the next phase of the redesign would be critical to the long-term success of the new organization since he would be dealing with the sensitive issues surrounding job design, compensation, and delegation of authority.

Professors Lynda M. Applegate and James I. Cash prepared this case, with assistance from Nicole Wishart, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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1. "Managing for the Nineties," presented at the General Electric Annual Meeting of Share Owners, April 27, 1988.

Company Background

General Electric Canada Inc., a 92% subsidiary of the General Electric Corporation (GE), was founded in 1892 to exploit Edison patents in Canada. (See **Exhibit 1** for a 1988 organization chart and a summary of key financial statistics.) For the first 70 years, GE Canada was a strategic business unit of the corporation and operated like a smaller version. Like the parent company, the organization structure was highly decentralized. In fact, GE Canada had served as the pilot site for the decentralization of GE during the 1950s and, since that time, had often been used as a model for organizational changes elsewhere in the corporation.

During the late 1960s and 1970s changes in the tariff laws and increased competition from Europe and Asia provided impetus for GE Canada to restructure. The goals of the restructuring were to increase profitability, to refocus the company and to expand from a primarily Canadian market focus to global markets. W.R.C. (Bill) Blundell, chairman and CEO of GE Canada, described the restructuring of the company in the 1987 annual report to shareholders.

For the past few years the management of GE Canada has been structuring the company for a future very different from the past. This was done in the belief that fundamental changes to the company were required to remain competitive in an increasingly complex and global marketplace. Included in this restructuring were the rigorous rationalization of a number of our manufacturing operations, clear identification of those areas where we believe we have a competitive edge operating from a Canadian base, and change of product mix to reflect the increasingly global nature of the market. For GE Canada, the key elements for success were: first, flexibility of our work force through multi-skilling; second, team work through information and responsibility sharing; and third, a commitment to both quality and to becoming the most productive work force in North America. We are making progress in developing the kind of work force that the future will require. We have had considerable success, most notably at our Bromont² facility, in developing self-directed, multi-skilled work groups. To reduce costs and improve operating efficiencies the financial and some administrative activities of GE Canada's corporate and Toronto-based businesses have been pooled and the resulting organization has combined a mix of people, service and technology that is professional, responsible and cost-effective. The organization was designed with self-managed work teams which provide employees the opportunity to share in the responsibility and the results.

In 1987, GE Canada moved its corporate functions (including the new Pooled Financial Services organization) and many of its Toronto-based businesses into a new facility at Meadowvale in Mississauga, Ontario, about 20 miles from downtown Toronto. Blundell described the Meadowvale facility as representative of the "New GE."

We believe that in many ways our new facility at Meadowvale represents the new GE Canada. We brought a number of our businesses under one roof, where they could benefit from being part of the GE Canada organization and, as a

2. In 1983, GE Canada brought on-line a new aircraft engine parts plant. Located in Bromont, Quebec, Canada, the plant was designed, and is currently operated, using sociotechnical (quality of work life) principles.

result, achieve many synergies, but where they could remain autonomous businesses devoted to the many markets that they serve.

Redesigning the Pooled Financial Services Organization

In late 1984, Edward N. Johnson was chosen by Ian Bourne, vice president of finance, to head the consolidation of the financial, employee services, facilities maintenance and information technology services at GE Canada. Prior to his transfer, Johnson had been responsible for financial resources at the Bromont plant. In this position he observed the sociotechnical design of the manufacturing operations, a process that was viewed as a tremendous success and resulted in significant cost savings, increased productivity and improved flexibility, speed and quality. The mandate given to Johnson by Blundell in 1985 was to reduce headcount by 40% over the next two years while continuing to provide high-quality financial and administrative services to GE Canada business units. Johnson described his assessment of the task confronting him as he assumed his new position.

A steering committee of senior financial and administrative managers throughout GE Canada was formed by the CEO who served as an active member of the committee. In our initial discussions we clarified our vision of the new organization and developed a set of guiding principles that could be used to initiate the redesign process. We agreed that a combination of 1) centralizing similar work, 2) analyzing and simplifying work structures and processes, 3) exploiting information technology (especially new opportunities in office automation), and 4) developing a flatter and more responsive organization offered the best chance of achieving the goals of the restructuring. We knew that to achieve the necessary productivity, quality and levels of service with 40% fewer people we would need to make optimal use of each and every employee. As time compresses our business processes we can't afford the luxury of relying on a rigid organization structure to define communication paths and the locus of decision-making. As we downsized and de-layered the organization we needed to restructure so that a manager would not end up with a crowd of direct reports that he or she would need to control and manage. We believed that the shift to self-managing work teams would be critical for helping us cope with the effects of the downsizing and de-layering.

An internal organizational development consultant, Mike Delisle, was brought on to educate the steering committee and to work with them during the restructuring. Concurrently, a massive communication program was launched to educate top management, middle managers, and employees on the need for a significant change in the organization to guarantee survival in the coming decade and the sociotechnical redesign process that would be used in the restructuring. Seven employees, representative of various functions and organization layers in the old organization, were asked to serve on a task force with Delisle. The task force's mandate was to analyze the existing organization structure and work processes and recommend a new organization design using a sociotechnical approach. (See **Exhibit 2** for a summary of the sociotechnical approach to organization and work redesign used at GE Canada.)

Over a three-month period of concentrated effort, the task force performed a technical, social and administrative analysis of the finance organization structure,³ the business and management processes, and the work of each of the 360 finance employees. During this phase of the analysis the task force actively worked with the majority of the employees in the organization to define their current work processes and to identify ways that the work could be simplified or consolidated and to identify and eliminate problems that hampered productivity. Recommendations were made for job redesign to increase the quality of the work for the employees while simultaneously increasing the quality of output for the customers. The steering committee monitored progress, ensured that the task force understood and remained consistent with the vision and guiding principles, and assisted the task force in removing any obstacles that could impede their progress.

The task force report, completed in June 1985, summarized the major findings of the analysis.

The current structure and culture within GE Canada evolved from and reflects the economic and social environment of the past 55 years—the depression years followed by the war years and the high-growth years—in which the strengths and weaknesses of the twentieth century North American smokestack industry environment were clearly displayed. The organization was structured like a steep pyramid with many layers of management. As the organization grew and diversified it was broken down into separate business areas, and there was a tendency to duplicate staff and tasks in each area. Response time within the organization was very long because decision making on even minor issues was reserved for management. Jobs were highly structured and rigid procedures discouraged creativity, innovation, risk-taking and accountability. Communication within hierarchical reporting channels and laterally among employees who must work together to accomplish a task was very poor and employees lacked the information needed to do their jobs. The organization demanded employee loyalty and in return provided a high degree of security to employees. Finally, employees were evaluated and compensated based on the length of service and their level in the organization, not on the quality and quantity of work. These characteristics may have been appropriate for GE Canada in the 1950s and 1960s. But, in the late 1970s and 1980s the company had evolved to a more focused, smaller organization in a much more dynamic environment. In order for our company to prosper, the organization must change to a leaner and more agile structure, and the culture within the organization must change to an atmosphere of openness, information sharing, accountability and entrepreneurship. A new organization structure and human resource strategy are needed that maximize the contributions of all employees by focusing on high involvement and commitment.

The task force recommended an organization design that centralized most financial, administrative and information technology services for corporate administration and the Toronto-based businesses into one unit composed of five centres of work-related activities (control, analysis, employee services, information systems, and facilities support). Coordination of the five

3. Originally the redesign was focused primarily on the finance organization—hence the name, Pooled Financial Services. Later the mission of the group was expanded to include financial, administrative (e.g., facilities, employee services) and information technology resources.

centres would rest with a Coordinators' Council composed of a coordinator for each centre and the manager of the unit, Ed Johnson. Within each centre, the on-going work of the unit would be performed through the creation of self-managing teams of employees while ad hoc work teams would be used to handle the project-oriented work within a centre and across centres. The task force report was presented to the steering committee where it was approved with minor modifications. The steering committee charged Johnson with the responsibility for selecting the five coordinators who would join him to form the Coordinators' Council and gave the council responsibility for implementing the redesign.

Evolution from Hierarchy to Self-Managing Teams

The implementation of the organization redesign began in summer 1985 with the creation of the Pooled Financial Services organization through the centralization of the financial, administrative and information technology services and the assignment of personnel to the five centres recommended by the task force. (See **Exhibit 3** for an overview of the new Pooled Financial Services organization structure.) Johnson selected the five coordinators who would serve on the Coordinators' Council and they worked together to develop vision and mission statements for the new Pooled Financial Services organization and to develop the implementation plan. In early 1988, the vision and mission statements were revised with input from all employees. (See **Exhibit 4** for the current Pooled Financial Services Vision and Mission statements.)

Early in the redesign process, each centre was broken down into two to three self-managing work teams. Within each self-managing team, the members often worked in smaller teams based on logical units of work. These work teams were flexible and dynamic, adapting to the needs of the organization and the team members. Control for the quality and quantity of the work and the process used to accomplish the work was given to the team. Much of the traditional managerial responsibility (e.g., planning, budget setting, hiring, firing, monitoring and managing) would eventually reside at the team level while the Coordinators' Council would provide leadership and organizationwide strategic direction to the teams and would assist in integrating and coordinating the work of separate teams.

Evolution from a hierarchical organization to self-managing teams was a gradual transition that involved mutual adaptation and responsibility sharing among the team members and the Coordinators' Council. While all teams progressed at different rates, on average it took approximately 24 to 30 months for the development of a self-managing team from announcement of team formation to the development of a functioning self-managing team. (See **Exhibit 5**.)

Between June 1985 and June 1986, Delisle continued to assist with the redesign efforts. With his departure, however, there was a period of 12 months when there was no professional organization development guidance and progress slowed. Fiona Cooper, a 10-year employee of GE Canada and a member of the Payroll team, discussed how the lack of professional organization development assistance in the early stages of the redesign slowed her team's ability to successfully accomplish the transition to self-management.

In the beginning we were all very unsure of what was expected of us. We really needed help. You can't just say "Now you are a self-managing team" and expect that we would know what to do. We had the initial course on team development and group process but then there was no ongoing follow-up and so soon we weren't meeting regularly and continued to rely on our previous

managers for direction. Once Bev and Marie were hired we really started making progress since they not only offered courses but met with us regularly as a team and as individuals to help us apply what we were learning.

Recognizing the need for ongoing organizational development and human resource management support, the Coordinators' Council recruited two human resource specialists to their group. Bev Davids, who came to GE Canada in July 1987 to assist with the Pooled Financial Services redesign, had a master's degree in organization development and 13 years experience in this area including 1 1/2 years as an independent consultant to large companies. Marie Percival, who had a bachelor's degree in business administration and 4 years employee relations experience within GE Canada, began work with Pooled Financial Services in July 1987. Under their leadership and guidance significant progress was made on the redesign effort. Davids described her role as the manager of organizational effectiveness.

I really see myself as a catalyst for change. I work with both the coordinators and the work teams to help them build the team administration and group process skills that will be needed to accomplish the transition from a hierarchy to a self-management team structure. I provide formal training courses, such as the Meeting Skills course and the Building Effective Interaction Skills course, and also respond to requests and initiate opportunities for training with teams and individuals. For example, I often meet with a team to help its members build meeting skills during their team meetings or to analyze work processes and redesign their work. When I first started at GE Canada, I realized that members of the Coordinators' Council held meetings but did not consider themselves a team. I worked with them to analyze their work processes and we found that over 70% of the tasks were highly similar and less than 30% were specific to their team. They were surprised at the overlap, and this was the basis for developing more of a team approach to their work. This also acted as a role model for the other teams and provided the coordinators with their own experience as a team member.

Percival also discussed her role as the employee relations specialist.

My primary role is to provide human resource support in the areas of staffing, human resource management, planning, communications, and salary administration. I also assist Bev as a resource to the teams to facilitate their development in the areas of team building, team administration and group process skills. I believe that the need for ongoing organization development support will decrease and that one person who combines both organization development and employee relations skills will be available on call to Pooled Financial Services. I already see a shift from "expert" trainer to more of a facilitator and support person in my work with both the coordinators and the work teams.

Davids and Percival provided extensive group and individual training. The formal training included programs on team development (16 hours), meeting skills (8 hours), and conflict resolution (16 hours). All programs included training on effective group process and were supplemented with on-the-job feedback and informal training. As each team gained the administrative and group process skills needed to self-manage, more and more responsibility was shifted from the coordinator and former managers to the team. (See **Exhibit 6.**) By December

1988, Johnson and other members of the organization estimated that they were approximately 50%-60% of the way to their goal of an organization structured around self-managing teams.

Al Holden, a 25-year GE Canada employee, had been a manager within an area of GE Canada outside of Pooled Financial Services. Holden voluntarily moved to Pooled Financial Services to become a member of the Information Systems Development team. He described the reasons for his move and his impressions of the transition.

It was not easy to give up my management title and become a member of a team but I chose to do this because I believed strongly in the concept. I have always felt that as more people participate in the decision-making process, greater benefits accrue to the total organization. I speak for many of the employees when I say that we never expected that it would take so long and be such an agonizing process. In the early phase of the transition, people continued to come to me when they had problems and expected me to provide a solution. I had to work with them to help them develop their own solutions and to look to other team members for expertise and assistance. It was hard to break old habits. At times I found myself biting my tongue during meetings to keep from jumping in and taking charge. I saw my role in the redesign process as helping the members of my team develop the management and administrative skills they would need to become fully self-managing. You might say that I gradually worked myself out of my previous job.

Holden also commented on the initial difficulties that his team experienced in breaking down old organizational barriers.

Initially, we had difficulty breaking down the divisional barriers and thinking of ourselves as one team. Our team was formed from three distinct groups that had previously worked in separate operating units. At first there was considerable conflict and confusion over whether we should remain as three subteams or become one large team. Over time we are beginning to think of ourselves as a single team and, as a result, we are gaining the benefits of the added skills and flexibility. To help break down division barriers we reorganized physically, changing people's locations to promote new communication channels. We also changed the work itself to enable people to work on projects that crossed previously defined group barriers. Team members met regularly to discuss problems we had encountered and develop solutions. We formulated our own policies for hiring, staffing, performance evaluation, and budget development and monitoring. We have definitely made major strides toward becoming fully self-managing but still have areas where more progress needs to be made.

Sid Clark, a member of the Coordinators Council with specific responsibility for the Employee Centre described his view of the transition.

Before the restructuring I was in charge of Division Accounting—these functions are now part of the Control Centre and Facilities Support Centre—and had four layers of management between myself and the employees who worked for me. With the reorganization they asked me to become coordinator for the Employee Centre, and the first order of business was to cut 60% of the staff and

remove all layers of management below me. I decided that the best way to accomplish this was to conduct the layoffs as quickly as possible and then to proceed with the redesign of the organization to self-managing teams. I decided to take a desk in the large, open work area and work along with the employees to understand the day-to-day activities, meet the people and get to know them. After a few months, I ranked employees on a variety of skill levels and asked former managers to perform the same rankings of the employees that used to report to them. I then laid off based on the rankings not by seniority. I knew that if we were going to get the work done with fewer employees as expected, we would have to keep the winners. Now I am in the process of helping the teams to become self-managing. That involves gradually giving them responsibilities that used to be reserved for managers. For example, to prepare the team to begin taking over the budget, I took them through last year's budget process and am currently having them do the expense tracking so that they can see how expenses are incurred. Next year they will prepare the budget and I will be available to answer questions and will review their final result.

Other teams were at different points on the road to self-management. Paul Vermette, a six-year GE Canada employee and a member of the End User Support team, described his team's progress.

Our team has made considerable progress toward becoming fully self-managing. We are actively involved in the hiring process. We evaluate our work load and assign people to projects. We develop the budget, track expenses and make all our own buying decisions. We were also the first team to perform our own performance reviews.

When asked to describe why he felt that his team had made so much progress, Vermette replied:

First of all, we are a small team with only four members, and, for the most part, we were very open to the concept of self-management. But the most important factor was that we had a former senior manager as a member of our team who believed strongly in the concept and was very skilled in helping and encouraging us to take on additional responsibilities. He was very adamant about not taking a directive role. He pushed us and he pushed the coordinator to make changes happen. He not only taught us the mechanics of the various management functions (e.g., how to develop a budget), but he also shared with us his vast understanding of the organization (e.g., who to go to for specific information and how to use the resources available), and gave us tips on how to manage in the political environment. Without him, we would have had a very hard time knowing where to begin.

Since all teams were responsible for developing their own approach to self-management, there were no standard procedures for performance measurement and other management activities within Pooled Financial Services. Initially, the Coordinators' Council believed that the teams would find the peer appraisal performance measurement process to be one of the most difficult to develop and implement. This did not prove to be the case in the teams that were currently performing their own peer appraisal. Vermette described his team's approach to self-appraisal.

It took us over 12 hours to reach consensus on the process we would use for peer evaluation. We all realized that, while the team would not make specific recommendations for salary and grade level upgrades, the evaluations would be used by the coordinators as important input in our salary determination. We also knew that we would need to develop a process that remained consistent with the performance appraisal process used throughout GE Canada so that the results could be communicated in a way that the rest of the company could understand. We developed a process that meets the company's needs for a standard evaluation process and meets our own needs for feedback on our work and review of our progress. The entire process takes about four weeks for each employee but we all feel that we are getting much better feedback than before. Most of us felt that our previous evaluations were very superficial and did not provide the kind of guidance and support that is a critical component to real growth and development. The self-appraisal team evaluation process has been in place for two years and we have had no major problems to date. We have never had anyone contest their evaluation and we wouldn't think of going back to the old evaluation process.

Barb Cromie, who had 19 years experience at GE Canada and was now a member of the Customer Information Centre team, discussed her reactions to the new organization and described how her team had faced the very difficult task of terminating a team member whose performance was unsatisfactory.

Before the reorganization I worked as a secretary for one of the vice presidents so I had no direct management responsibilities. The reorganization really expanded my opportunities and responsibilities which at times can be somewhat intimidating but has made work much more enjoyable. Since we make decisions as a team, we all feel more comfortable with those decisions. We learned to seek expertise from each other and from people all over the organization. We develop our own work procedures and are able to change or modify them as new situations and needs arise, and we handle problems as they occur. You don't have to write memos and wait weeks to get a response. I feel that I have grown considerably in my management and group process skills through the formal courses that have been offered, through the support and guidance provided by the coordinators, the human resource support and my team members, and most importantly through the experiences that I have had over the past few years. I'll never forget my first experience running a meeting. While I had been in many meetings before, I did not know there were specific things you could do—like setting agendas, summarizing action plans and encouraging participation—which help to make meetings more successful. The Meeting Skills course provided me with lots of practical skills and gave me a chance to practice those skills in a supportive environment. But, the first time that I had to stand up and run a meeting, I was very nervous. Since then I have had the opportunity to run many meetings and now feel very comfortable. In fact, when I attend meetings I often find myself analyzing the process and thinking of ways that the meeting facilitator could do a better job of moving things forward.

I think that the most challenging management task that I have faced to date, however, was when our team determined that an employee that we had hired was

not working out and would need to be terminated. The team decided that only one person should talk to the employee, and I was elected. I first talked with the coordinator and then sought out Marie Percival for support and guidance. Marie really helped me work through the steps I would need to take and the potential problems that could arise. Since I had never faced this situation before, I did not know that I would need documentation and did not have hard evidence of the employee's weaknesses. She explained how to handle that situation and I learned an important lesson on the importance of documentation of weaknesses as well as strengths during evaluations. She also role-played the conversation that I would have with the employee to be sure that I would handle the situation according to GE policy and that I felt comfortable with the potential responses of the employee. At one point she asked me to think of the worst possible thing that could occur and then to describe how I would handle it. The actual meeting with the employee went very smoothly and our team learned a great deal in the process.

In addition to the redesign of the organization, management processes and work processes, the physical facilities and technology infrastructure were also analyzed and redesigned to support and facilitate the organizational changes.

Physical Facility Redesign

Since the move to Meadowvale was already in the planning stages at the time of the creation of Pooled Financial Services, the physical environment was redesigned for the new Meadowvale facility. The goal of the physical facility redesign was to create an environment that promoted flexibility, openness and improved communication. Work areas were arranged to optimize communication and the flow of work within each centre and between centres. The work areas were created using modular, movable dividers that could be easily changed to adapt to new communication and work patterns as the needs of the groups changed. Rich wood trim and smoked glass provided a warm, but open feel to the work areas. Consultants from the furniture supplier and the architect worked with an employee team to design the physical work environment.

In addition to individual work areas, small group work areas, some with personal computer workstations, were placed throughout the different centres. Employees were encouraged to use these group work areas for both office-related activities and socializing. Formal, private conference rooms were also available ranging in size from small meeting areas to large auditoriums. A personal computer laboratory/classroom was available and courses were offered to help employees learn the computer skills and the software applications that would be so critical to performing their work in the future.

Information Technology Infrastructure

Early on the steering committee recognized that information technology would be a critical factor for both supporting and enabling the new organization design and the intensive information sharing and communication that would be required. Each employee needed a personal computer workstation that would enable him or her to access, analyze and communicate the information needed in their jobs. Since all secretarial and administrative resources were eliminated in the

redesign,⁴ productivity support software applications (e.g., word processing, electronic calendars) were also needed. Special applications were written as the need for them arose. (For example, special database access programs were written to allow the payroll and control employees to gain on-line access to critical employee and financial data and to facilitate the transfer of that data to LOTUS 1-2-3 spreadsheet programs, and a separate application was written to allow employees to access hotel information to help them make their own travel arrangements.) Robots (affectionately named Harvie I and Harvie II) were purchased to deliver mail and supplies, and electronic mail, voice mail and a FAX machine were installed for use by all employees.

Computer resources were expanded to accomplish the transition and by 1988, in addition to the personal computer workstations, three Honeywell DPS8-70 computers were in use to support the information processing needs of GE Canada and Pooled Financial Services. The cost of the technology expansion was approximately C\$500,000 but the net cost reductions of over C\$5,000,000 in salaries and benefits were used to justify the expense. In 1988, a decision was made to migrate from the three Honeywell machines to an IBM 3090 to handle centralized mainframe information processing needs. Considerable effort was underway to identify the organizational information processing needs and the technologies available to meet those needs in preparation for the migration.

Jane Roche, who had worked for GE Canada for nine years and was now a member of the Analysis and Reporting team, discussed how the technology supported her work.

Since we no longer have secretaries, the technology is critical for communicating with other GE employees. Everyone uses E-mail or voice mail, and we no longer send memos. I personally like to use E-mail since most of my communication is with people inside GE. When I have a corporate report that needs to be done, I send out all my requests for data on E-mail and the divisions can send back the data to me on-line. That really saves time and improves accuracy since we are not re-keying data. I also use the special database access programs that were written to download data from the mainframe. The data can be loaded directly into LOTUS 1-2-3 which I use for the analysis. The company is very supportive of us and is very willing to supply any hardware or software we need. They recognize that we could never get the work done with fewer people if we didn't have these productivity tools.

Marilyne Kapuvári, an employee of GE Canada for 14 years and now a member of the Information Systems Development team, also believed that the technology had been a critical factor that enabled them to accomplish the transition.

Technology has been critical in allowing us to work much more productively and effectively as a team and as individuals. I use E-mail to communicate within the organization, and use the word processing and spreadsheet functions to write documentation, do budgets and manage my projects. The biggest time savers for me are all the communication and work productivity tools on the PC and the

4. There were no secretaries, clerks or administrative assistants in the Pooled Financial Services organization. Not even the manager, Ed Johnson, had clerical or administrative support and he did his own typing, copying, and mailing of correspondence as did all other employees in the unit.

information access tools on the mainframe. Top management—both Blundell and Johnson—encourage us to identify ways that technology can help us do our work in a more efficient and effective manner and are very willing to try out new technologies that we think may be of help.

Cromie depended on voice mail and access to the product information databases to support her work in the Customer Information Centre.

We have access to information through the Product Directory and other mainframe databases. It's our lifeline for handling customer complaints and supplying information. When it goes down, which luckily is not too often, we can rely on paper directories of product information but they are not as up-to-date which can be a major problem in dealing with customer complaints. We update the information files on a daily basis. I also use voice mail to allow customers to leave messages for me—although we try to give personal service whenever possible.

Evaluation of the New Organization

In early 1988, Johnson reflected on the progress that had been made over the past three years in fulfilling the objectives of the redesign. He recognized that they were well on their way to accomplishing the original vision of the new organization. The basic structure for the self-managing, sociotechnically designed organization and the infrastructure needed to support it were now in place. All employees were working within teams that were in the process of transition to self-management. The employee reductions, mandated by Blundell, had been achieved without decreasing the level or quality of service to the customer. (See Exhibit 7.)

In discussions with members of Pooled Financial Services, Johnson had heard many positive comments about the restructuring but had also heard of problems. Cromie summarized her impressions of the new organization.

My job is much more satisfying and rewarding because of the increased responsibility and challenge and the opportunities to develop a wider range of skills. As a team we have really grown in our ability to communicate and interact with one another. We have learned to really listen to one another and to consider each other's point of view while making decisions. Despite our growth as a team, there are areas where we still have difficulty. It can take us longer to reach a decision since we all need to come to consensus. We also have problems knowing where the responsibility of the team ends and the responsibility of the coordinator begins.

Yvonne Zeitoun, member of the Ledger team, had been with GE Canada for eight years. She discussed her views on the team concept.

For me the transition to the self-managing team concept has been a very positive one. Prior to my current project with RCA, I had responsibility for fleet administration. In the old hierarchy system, I would never have been considered for that level of responsibility because I had not risen to the appropriate level of

management. Now I have many more opportunities and the potential for taking on all types of projects and responsibilities exists and is even encouraged. I am learning new skills and the new experiences are broadening my knowledge of the business, the GE organization and management processes. Not everyone has been so fortunate, however. Some people are satisfied to do the job and don't want to get involved in decision making. I also think the change has been very hard on the senior staff who used to be managers. They worked hard to reach that level then the organization changed. For those who became coordinators, they needed to learn to delegate responsibility and train others to do the jobs they used to do. For those who became team members, they needed to adjust to being part of the work group with equal say in how things will be done rather than making and enforcing decisions. Somehow it just doesn't seem fair for everyone.

As a former manager, Holden spoke of the impact of the new organization on former managers.

The transition from a hierarchical organization to self-managing teams was especially difficult for former managers. Early on in the process, we did not have any special training to help us cope with the transition in our roles from manager/decision maker to a member of the work force. The employees did not know how to treat us and we had difficulty breaking down the old management/employee barriers. We ended up accomplishing the transition in a phased approach. Initially, we [the former managers] operated as senior team members—continuing to function in the role of managers. Gradually we worked our way out of the management role by training the other members of the team to take on more of the administrative and decision-making responsibilities. We really needed help in understanding how to break down the traditional stereotypical management roles and form new roles based on self-management and a team approach. Early on we did not realize that the process would take time. As a result, in the beginning we felt that we were not living up to the expectations that had been set so all of us felt very frustrated.

Cooper provided additional feedback on the new organization.

Since the reorganization, my job has definitely expanded and taken on more variety. The new structure encourages us to take on new responsibilities. For example, shortly after the reorganization, one of the former managers quit. I had helped this manager in the past and knew how to carry out some of her responsibilities so I jumped in and did the work. Before the change, work was dedicated to a specific person. If that person left, someone else was hired. Now work is the responsibility of the team so if someone quits, the team meets to discuss ways of getting the work done. In some cases we may decide not to hire someone new but to split up the responsibilities among different team members. We're a lot more flexible than we used to be. Another positive advantage of the team concept is that now I can voice my opinion and people listen. Before, decisions on how you did your work were left to managers who didn't have to live with the consequences of those decisions on a day-to-day basis. Now there is no one looking over my shoulder telling me what to do and how to do it so I feel less pressure even though I am doing more work than before. But in addition to

these advantages, there have also been problems. For example, we are told that everyone on the team is equal, but we are all paid differently and are at different grade levels in the organization. We are encouraged to take on new responsibilities, but we are not necessarily compensated for jumping in and doing the extra work. Our pay needs to be more closely tied to the quality and quantity of our work. In addition, our bonus systems are all designed to recognize individual performance, but we are expected to work together as a team. Finally, we are told we are supposed to be self-managing yet we don't always get the information we need to make decisions. These inconsistencies make it very difficult to live up to the expectations of what we are supposed to achieve.

Kapuvvari also discussed difficulties with the new system.

The most difficult part of the new structure is taking on all the administrative responsibilities in addition to our regular work. We are asked to assume responsibility for scheduling the work of the team but often I don't know what other team members are doing. Because our team has not reached full maturity, I don't feel comfortable just going up to someone and asking them what they're doing and I'm not sure how to ask people to help me when I need additional resources.

In early 1988, the Coordinators' Council decided to conduct an attitude survey of the Pooled Financial Services employees to get a broad range of opinions on the new organization. An ad hoc team of employees from different teams throughout the organization was assembled and, with assistance from Davids, Percival, Johnson and the coordinators, they developed and administered the survey. The results of the survey highlighted the positive gains that had been made and the areas which still required attention. Davids described the key findings of the survey.

The survey helped to highlight the areas of strength and weakness in the organization redesign, and provided a good picture of where we needed to focus in the future. It was clear that there was support for the new organization design. The majority of people felt that the self-managing team concept had provided increased responsibility, control and initiative to the team in determining their work. They were very positive about their team communications and the commitment of the members of their team to working together as a group. They felt that their personal roles and responsibilities were clear in their own minds but not in the minds of the team, and they were much less clear on the role of the coordinators. They felt that the coordinators were committed to the new organization but felt that communications with coordinators on the goals and objectives of the organization could be improved. They felt there was genuine concern on the part of top management for job quality but were confused by how the administrative and team building responsibilities were translated into activities for them to carry out as part of their jobs. They were also confused about how the quality and quantity of their work were reflected in raises and compensation. A number of employees mentioned that they felt that they had not received recognition or commensurate pay for the additional work they had been asked to assume. Finally, the teams felt that ongoing training and support were critical for helping them to become fully self-managing.

The survey findings were presented in June 1988. Each team assumed responsibility for implementing action plans based on their centre's data. The Coordinators' Council assumed responsibility for developing recommendations, and for addressing the overall concerns expressed in the survey. Davids and Percival assumed responsibility for coordinating this project. They described their efforts to date in responding to the survey.

The critical issues highlighted by the survey that required immediate attention were: (1) The coordinator role needs to be more clearly defined and communication between (and among) the teams and the coordinators must be improved; (2) Reward and compensation systems need to reflect expanded job designs and must recognize both team and individual performance based on quality and productivity measures; (3) In some teams, the work had changed significantly requiring jobs to be re-examined; and (4) Career planning must recognize that the flatter Pooled Financial Services organization provides less opportunity for advancement into managerial positions. In late summer 1988, we began to address these issues and by December 1988 had conducted training programs and developed some draft documents that could be reviewed by the Coordinators' Council and the employees.

Organizational Role Definition and Job Design From the beginning we wanted employees to be involved in defining their roles and designing their jobs, and to be responsible for continuously modifying and adapting them to the needs of the team, the organization and their personal growth needs. We recognized that this approach would make standard job descriptions obsolete. From an organizational perspective, work was assigned to a team, not to an individual, which complicated the use of standard job descriptions. As a result, we developed a more general approach to organizational roles in which jobs were designed around three major areas: *Technical*—job-related work of the employee/team, and the technical requirements of the work; *Team administration*—planning, organizing, leading, integrating and controlling; and *Team process*—participation, facilitation and conflict resolution. (See **Exhibit 8**.)

Compensation, Rewards and Career Advancement Currently we have two salary plans—Management and Professional, and Technical and Administrative (called Administrative Support). We no longer feel that this distinction makes sense in our organization structure. As we redesign the compensation system we need to analyze the compensation and benefit structure corporatewide and ensure that anything we adopt allows the flexibility for movement within the GE Canada organization. We also must keep in mind labor legislation that can influence how we design our compensation system. Finally we would like our compensation and reward systems to be tied more closely to our evaluation systems, to consider both team and individual contributions, and to support the goals of the Pooled Financial Services organization. As a result, we expect that in the future, compensation systems will reward work quality, productivity, risk-taking, management skills, initiative, group cooperation, and teamwork. Progression and career advancement should reflect the acquisition of more advanced skills and responsibilities in the three areas of job design—Technical, Team administration, and Team process.

Future Plans

As 1988 drew to a close, Johnson reflected on the challenges that lay ahead as the Pooled Financial Services organization continued to transform itself from a traditional hierarchy to an organization based on self-managing teams. He reviewed the latest documents summarizing the new approach to job design, compensation systems and the evolution of the coordinator and team roles and responsibilities. As he turned his attention to the plans for the migration from a Honeywell to an IBM computer environment, he recognized that this would be a good time to re-evaluate the information technology infrastructure. Were they doing all they could to exploit the potential of technology for helping them to achieve their strategic goals and objectives and to support the new organization?

Exhibit 1 Key Financial Statistics and Organization Chart

Five-Year Summary (dollar amounts in millions except per share amounts)

	1987	1986	1985	1984	1983
Sales of products and services	\$ 1,689	\$ 1,642	\$ 1,494	\$ 1,418	\$ 1,393
Net earnings	62.5	56.3	52.8	35.6	35.0
Net earnings per share	1.27	1.15	1.08	0.73	0.71
Earnings as a percentage of sales	4.4%	4.0%	4.1%	3.0%	2.9%
Earnings as a percentage of average shareholders' equity	12.5	10.6	10.6	7.6	7.6
Book value per common share	\$ 10.39	\$ 9.49	\$ 10.53	\$ 9.86	\$ 9.53
Market price (last sale of the year) per common share	13.00	20.33	12.67	9.17	9.33
Dividends paid on common shares	2.17	0.40	0.40	0.40	0.40
Current assets	\$ 691	\$ 776	\$ 739	\$ 668	\$ 566
Current liabilities	391	490	405	365	307
Total assets	1,030	1,089	1,054	978	888
Plant and equipment additions	\$ 58.7	\$ 41.8	\$ 56.4	\$ 45.0	\$ 43.0
Depreciation and amortization	34.3	39.2	20.5	25.1	29.0
Provision for income, property, and capital taxes	60.3	57.4	47.8	37.6	33.0
Average number of employees	11,115	11,552	11,865	13,032	14,657

This summary has been restated where necessary to reflect the six-for-one stock split.

GE Canada—Corporate Organization

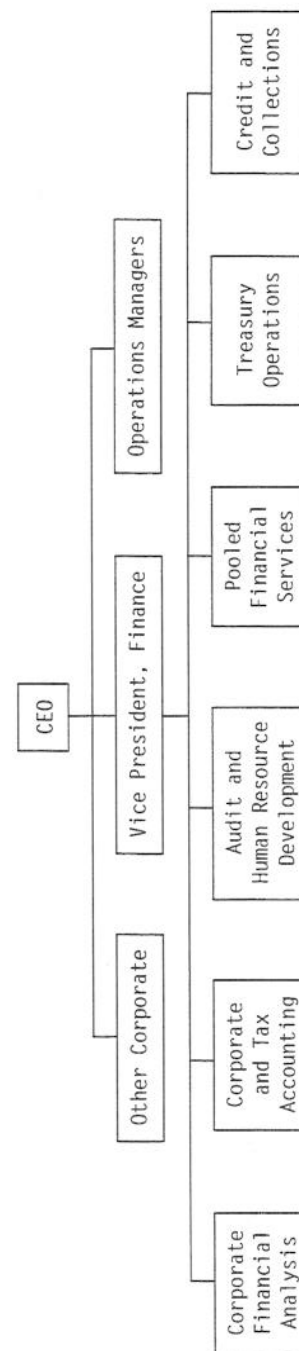


Exhibit 2 Sociotechnical Redesign Process

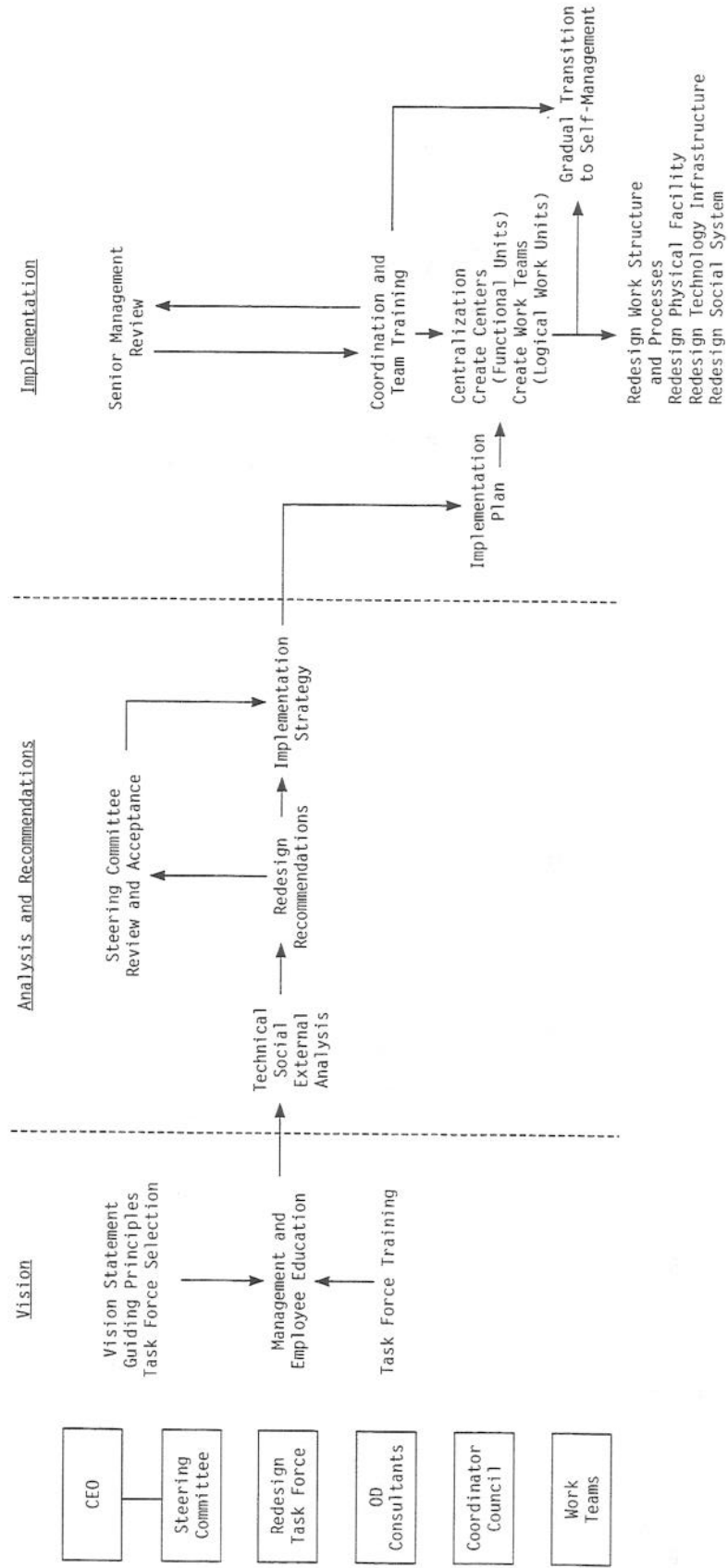
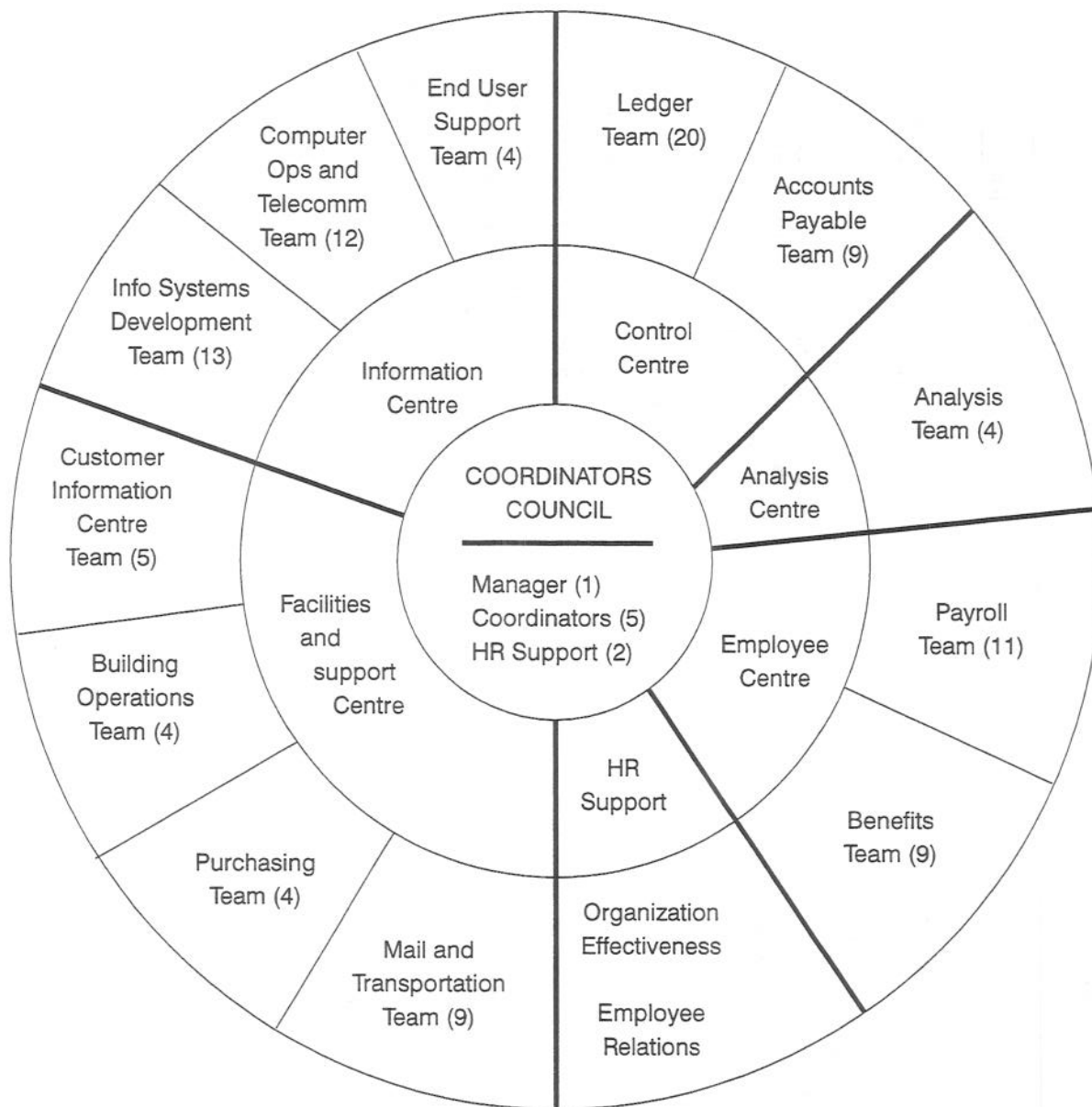


Exhibit 3



Source: GE Canada, Pooled Financial Services

Note: Numbers in parentheses are the number of employees in each team as of 10/1/88.

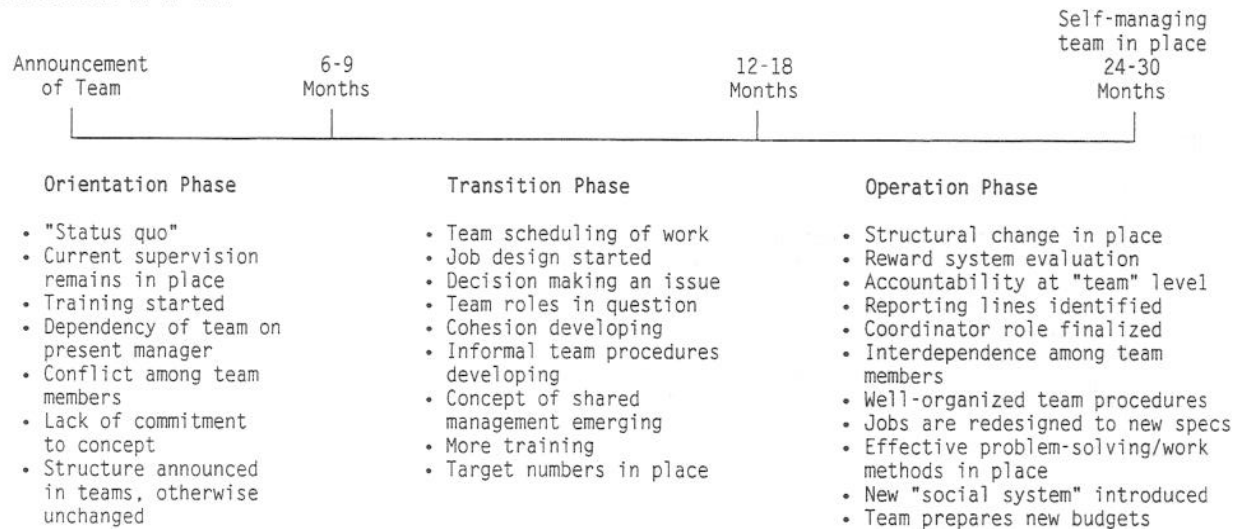
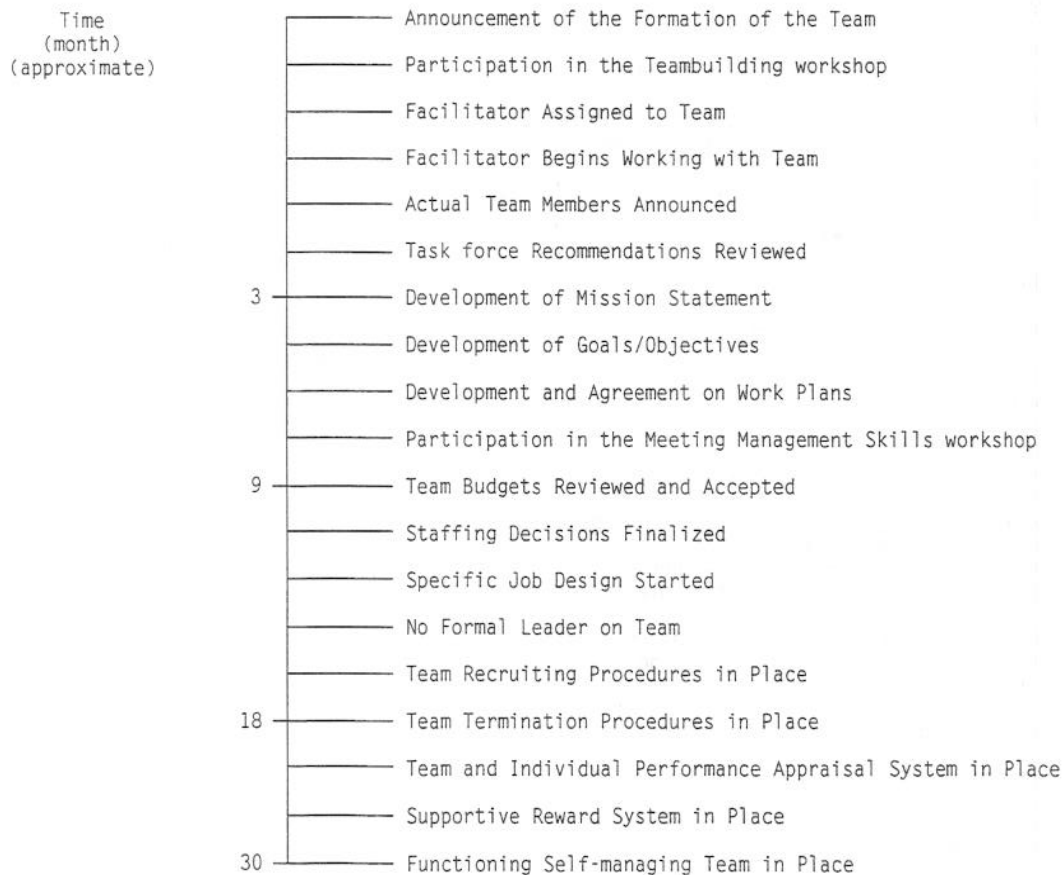
Exhibit 4 Pooled Financial Services—Vision and Mission

VISION	MISSION
Pooled Financial Services is using sociotechnical methods to create an organization which: • is a value-added partner of the GE Canada businesses; providing a professional level of service that is responsive and of high quality at optimum cost • functions with self-managed teams—sharing information, leadership, and responsibility • develops an environment which allows employees to attain their full potential and maximize their contribution to the organization • encourages personal creativity, innovation, intrapreneurship and risk taking—behaviors which result in doing "the right things right" • recognizes team and individual performance based on ability and opportunity to impact results • manages work force fluctuations with fairness and consideration for individuals • encourages social interaction and cares for its employees' physical and emotional well being	Pooled Financial Services provides a variety of centralized services in support of the served GE Canada businesses. These services include: - Accounts payable, customs, and general accounting - Administrative support and building operations - Analysis and reporting - Information processing, systems and telecommunications - Payroll and benefits administration Pooled Financial Services will: • effectively use resources and technology to provide a professional level of service that is responsive and of high quality at optimum cost • operate with self-managed teams that encourage innovation, facilitate open communication, and foster a strong sense of purpose, pride and trust • pursue fair and equitable practices in the management of human resources • support employee interaction, a sense of well being and a pleasant working environment

Source: GE Canada, Pooled Financial Services.

Exhibit 5 Self-Managing Team Development Process

DEVELOPMENT OF A TEAM

**Benchmarks in Team Development**

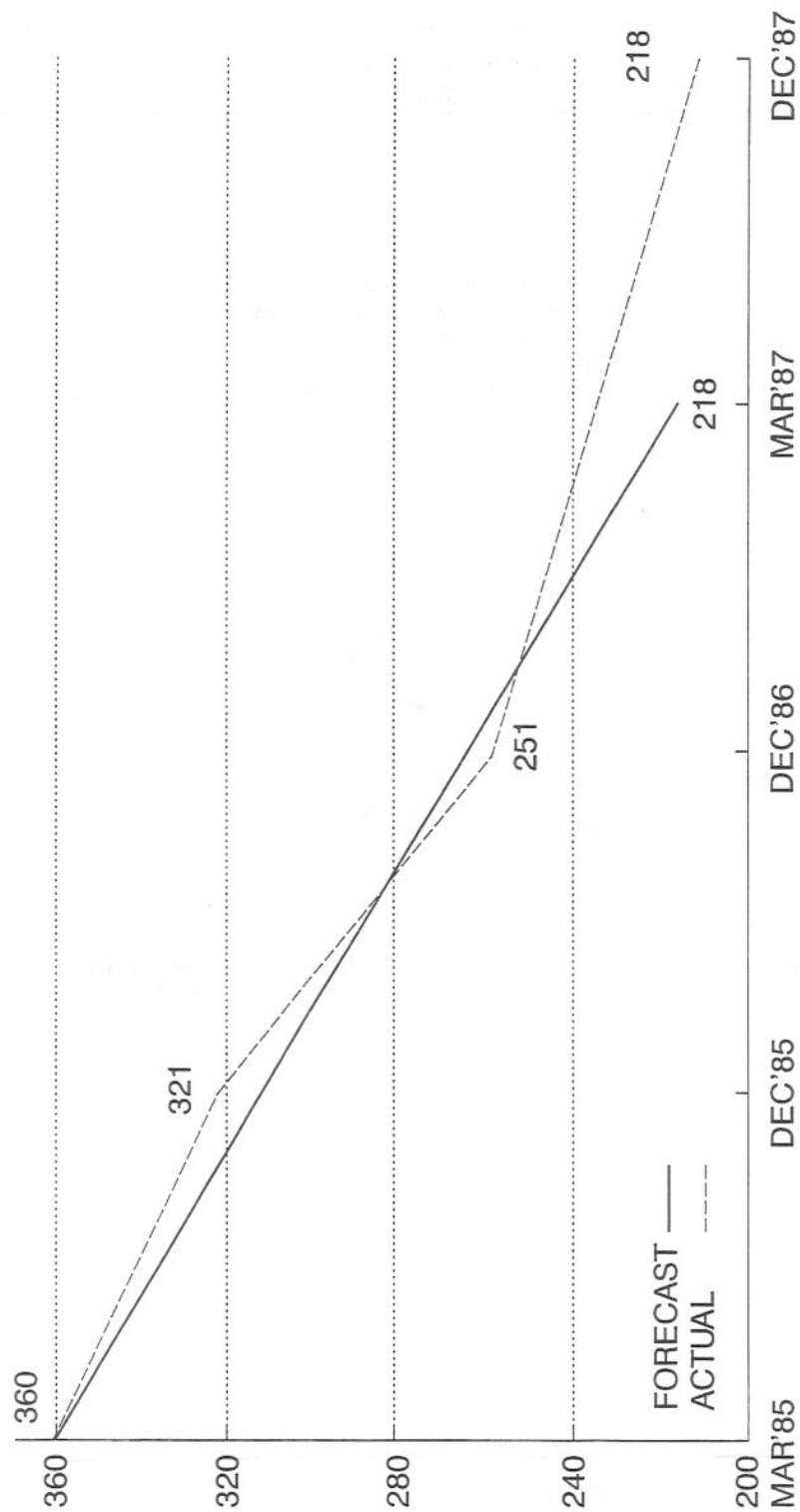
Source: GE Canada, Pooled Financial Services.

Exhibit 6 Pooled Financial Services—Team Development Process

DELEGATION OF MANAGEMENT TASKS AND ACTIVITIES WITHIN SELF-MANAGING WORK TEAMS	New Team	Transition Team	Mature Team
PLANNING			
- Determining section vision	c	c/t	t
- Developing team goals and objectives	c	c/t	t
- Developing long/short-term objectives and strategies	c/t	t/c	t
- Establishing section/team work (performance) plans and measures (allocation of work; performance criteria)	c/t	t	t
- Developing a financial budget (operating and capital)	c	t/c	t
- Establishing a human resource plan (staffing; promotion; training and development)	c	c/t	t/c
- Developing a reward system plan (determining guidelines, amounts; non-monetary programs)	c	c	c/t
ORGANIZING			
- Obtaining the necessary resources	c	t/c	t/c
- Ensuring the necessary skills are available or plans are in place to obtain or develop the skills	c/t	t/c	t/c
- Administering the budgets	c/t	t/c	t/c
LEADING/INTEGRATING			
- Providing a vision for the team	c	t/c	t/c
- Providing guidance, coaching, facilitation	c	t/c	t/c
- Communicating on all relevant issues (work, interpersonal)	c/t	t/c	t/c
- Influencing, empowering, and motivating team members	c	t/c	t
- Ensuring team processes are functioning (decision making, feedback, confrontation, planning)	c/t	t	t
- Integrating team members, teams with other teams and external components	c	t/c	t
- Managing meetings processes	t/c	t	t
CONTROLLING/MEASURING			
- Monitoring of expenses and expenditures for goods and services	c	t/c	t
- Controlling approvals and appropriations	c	t	t
- Reviewing budgets	c	t/c	t
- Administering policies	c	t	t
- Monitoring performance	c	t/c	t
- Reviewing work plans and results against established measures	c/t	t/c	t
- Reviewing human resource and reward system plans	c	c/t	t/c
- Completing performance appraisals	c	t/c	t
- Establishing appropriate signing authorities	c	t	t
- Monitoring intra/inter/group team people relationships and communications	c	t	t
- Completing relevant documentation and paperwork	c	t	t
- Reviewing team progress and organization effectiveness and appropriateness	c/t	t/c	t
LEGEND (responsibility for activity)			
c = coordinator			
c/t = coordinator in consultation with team			
t/c = team in consultation with coordinator (within guidelines)			
t = team (within guidelines)			

Source: GE Canada, Pooled Financial Services.

PFS --- NUMBER OF PEOPLE TOTAL FINANCE



TOTAL FINANCE
Corporate & Toronto Businesses

Source: GE Canada, Pooled Financial Services.

Exhibit 8 Pooled Financial Services—Organization Roles

	Coordinators' Council/ Coordinators	Teams/Team Members
1. TECHNICAL WORK	PFS Mission	Team Mission
		Work Plans
2. TEAM ADMINISTRATION		
Planning	PFS long-range objectives Client satisfaction objectives PFS budgets and plans Operating priorities Transition planning to SMWT	Team work planning Operating budgets Team development Plans/schedules/resource needs Productivity, service, quality measurements
Organizing	Skill needs Organizing SMWT OE/HR support Compensation, rewards, recognition	Staffing processes and staffing Team processes and administration Physical and information resources Team skill needs
Leading/Integrating	PFS vision, mission Guide, coach, facilitate Communications processes Influence, empower, motivate	Develop team processes Coaching and counseling Integration Participation
Controlling/ Measuring	Review organization effectiveness/ team progress Operating measurements Appraisal of team performance	Track team performance Monitor work plans Track/explain financial performance
3. TEAM PROCESSES		
Group Processes		Process awareness Participation Facilitation Conflict resolution Problem solving Initiating/Influencing
Communications		Listening Information sharing, feedback
Social Functioning		Team spirit Team welfare/wellness Acceptance of Responsibility Enthusiasm/Attitude/Energy Flexibility/Adaptability

Source: GE Canada, Pooled Financial Services.



Capital Holding Corporation— Reengineering the Direct Response Group

Caring, listening, satisfying . . . one by one.

- DRG Vision

At the end of 1991, Capital Holding Corporation's Direct Response Group (DRG) was in the midst of a strategic-change initiative that it referred to as "reengineering." Norm Phelps, DRG's president and Pam Godwin, DRG's senior vice president, Customer Management Division (CMD), described why the reengineering initiative had been undertaken. Phelps noted,

In 1988, we took a close look at the performance of our markets, annuities, and direct-response insurance (life, health, and property and casualty), and concluded that direct-response insurance as it was being conducted, was a slow-growth business. We had had an illusion of high growth because our annuity products were mixed in with our insurance results. Consequently what was happening to the core business was not easily discernable. We were growing and exceeding profit goals, but when we looked underneath the covers and took out the annuities, we found that the basic insurance business hadn't been growing for years. Further, the profitability of the insurance business was suffering because of excess mortality, terrible persistency, and increasing expenses.

We concluded that the days of mass marketing were over. We recognized that to improve our value to the customer, to increase response rates, and to turn persistency around, we would have to move toward strengthening our relationships with existing customers and targeting those customers whose profiles matched our strategies.

Professor Donna B. Stoddard prepared this case, with the assistance of Research Associate C. J. Meadows, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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To that end, we created a new vision for DRG (**Exhibit 1**). Basically, our vision is to be exactly what most people don't expect us to be—an insurance company that cares about its customers and wants to give them the best possible value for their premium dollar. We initiated a comprehensive vision communication program and a strategic planning process that would enable the implementation of our new vision.

Godwin added,

In 1990, we took stock of our progress toward the implementation of our vision. And while we were making headway, we realized that we hadn't really attacked the fundamental business model and processes that make it all work. It wasn't a matter of bending and shaping our current systems into new models. We had to build new models from the ground up. We had to change our business, not on our terms, but on the customers' terms. And we had to make those changes fast, while maintaining profitability and generating a return to our shareholders. We had to create a step-by-step strategy for change—a strategy we call reengineering.

DRG's reengineering initiative started in the fall of 1990. By the end of 1991, over 150 employees organization-wide were engaged in the process of reengineering, and DRG estimated it had spent \$5 million to \$10 million on systems and personnel. Eight teams of employees were prototyping new ways of working in the future, designing and developing ideas, and conducting tests to refine the organization's understanding of how these new ways of operating would enable it to realize its business goals. Joan Chandler was the director of reengineering implementation and reported to Godwin. "We've committed tremendous resources to the reengineering initiative," noted Chandler.

Often when people in other organizations talk about reengineering, they mean business process redesign. At DRG, we are changing our strategy, culture, processes, **and** products, while staying within our core competencies. Further, as we learn from the various reengineering prototypes, we refine our business model.

We're learning by doing . . . our prototypes are living rough drafts.

As DRG senior management moved forward into 1992, there were concerns. "Can we make the dramatic changes that will be necessary to fund our growth into the twenty-first century? Do we have the right vision? What else do we need to do to ensure the success of our business?"

Company and DRG Overview

Capital Holding Corporation (CHC) was a diversified financial services company. In 1991, its revenues were in excess of \$2.7 billion and it had over \$19 billion in assets (**Exhibit 2**). CHC was organized into four business units: Agency Group, Direct Response Group (DRG), Accumulation and Investment Group (AIG), and Banking Group. Descriptions of and financial data for each business unit are summarized in **Exhibit 2**.

DRG offered a full line of life and health insurance and property and casualty insurance to individuals by means of mail, telephone, and other direct-response methods. **Exhibit 3** highlights the structure of DRG at the end of 1991. Headquartered in Valley Forge, Pennsylvania, DRG included two organizations and their affiliates: National Liberty Corporation, which underwrote and sold life and health insurance and Worldwide Underwriters Insurance Company, a property/casualty underwriter and sales organization. National Liberty Corporation was best known in the early 1980s for its television advertisements featuring celebrity endorsers such as Lorne Green, Michael Landon, Art Linkletter, Ed Asner, and Tennessee Ernie Ford. In addition to television commercials, newspaper inserts and direct-mail advertising were used to make contact with prospects. **Exhibit 4** highlights the market segments upon which DRG focused in 1991.

DRG competed with insurance and financial services companies. Other major direct-response insurance companies included Prudential, Physicians Mutual, JC Penney Life, and Allstate.

In agent-sold insurance companies, variable acquisition costs consisted primarily of agent compensation, which is paid throughout the life of the policy. At DRG, the variable costs associated with a TV commercial or mail campaign were front-end loaded. Phelps estimated that between 85% and 150% of a product's first-year premium was spent in marketing costs before a single policy was sold. Further, Geoff Banta, vice president, noted, "Our experience suggests that for every 1 million prospective customers that we contact in a mass marketing campaign, we can expect to convert 50,000 of those prospects into customers."

When CHC began direct-response distribution, the group's financial performance was excellent. In 1986, National Liberty was touted as having one of the fastest-growing distribution channels in the insurance industry—it was the quintessential insurance mass marketer. By 1989, however, the picture looked different.

DRG's Traditional Approach to Business

Godwin described DRG's business strategy in the 1980s.

We were a direct-response insurance company engineered for the mass market. We built a highly efficient factory for marketing on the averages, a one-size-fits all approach to selling insurance. Out of that factory came products and advertising targeted by rudimentary demographics—like age, state and zip code. The processes yielded a huge volume of names to feed the assembly line, as many as one million prospects in a single year. This volume added about \$100 million of new business each year until the late 1980s and generated double-digit earnings growth.

As shown in **Exhibit 3** DRG had traditionally been organized along functional lines. As a result, though many were experts in their respective area, few understood where they fit in the "big picture." At the end of 1991, DRG employed over 2,000 employees, 70% of whom worked in Godwin's organization (CMD), which included operations, customer marketing, and customer management teams.

Customer Management

Exhibit 5(A) shows a typical customer interaction with DRG's customer service department in the late 1980s. Traditionally, a customer might call to make two requests: "Increase my accident and health coverage, and give me information about my life insurance policy beneficiaries." The customer service representative (CSR) would submit action requests through the accident and health online system, Challis 3, and the life insurance system, Life 70. **Exhibit 5(A)** illustrates the routing of the requests to the various departments involved. Within two weeks of phoning into the customer service center, the customer would receive two responses. Godwin described the traditional and planned customer interaction processes.

In the past, our interaction with the customer suffered from the curse of departmentalization. We handed the business off one stage at a time until somebody got back to the customer. Further, since there was a lack of responsibility for any individual customer, we seldom used an interaction with a customer to find out more about the customer and probe for unmet needs. For example, suppose a life insurance customer called to report an upcoming change of address. Typically, we would make the address change and confirm it by mail.

With the customer management teams (CMTs) [described below] that we are prototyping, rather than just make the change, the representative would probe for unmet needs and perhaps find that the customer was purchasing a new home and didn't have homeowners' coverage yet. After discussing his needs, the CSR could propose that the customer purchase our homeowners' coverage.

The new systems that we are developing will make it possible to confirm policy changes in writing within days, not weeks (**Exhibit 5 (B)**). Also, whereas in the past, a number of functional areas were responsible for individual tasks associated with a customer's request for a change to his/her policy, our new systems will give control of the interaction with the customer to the CMT.

Sales and Marketing

As a direct-response company, DRG used television commercials, newspaper inserts, and direct-mail advertising to make contact with prospects. A typical interaction with a life insurance prospect, in the mid-1980s, might have started when an individual called in to request product information in response to a television advertisement targeting veterans and featuring Roger Staubach. Alternatively, an individual might have called DRG in response to a newspaper insert describing a product offering to the broad market. In response to that phone call, the prospect would receive three mailings. First, a kit describing the product would be mailed to the potential customer through Western Union (to highlight the importance and urgency of responding). Second, within five days, the customer would receive another sales kit (whether or not he or she had responded to the first) as a reminder of the insurance inquiry and opportunity. If the customer did not respond, he or she might receive a phone call from a telemarketing sales representative who would attempt to close the sale. A third package would follow within five days of the phone conversation.

Mary Ann Farrow, vice president, commented:

Traditionally, we had a product focus. We would typically develop a new product and then market it to a broadly defined market such as Veterans.

Typically, our systems were such that if at the beginning of a campaign for a new product we decided that we would send three kits to a customer, the customer received three kits, even if he or she responded to us after receiving the first.

As we move into the future, our goal is to be more customer focused. Being customer focused includes developing products that our customers have told us they want and need, responding appropriately to those needs, and not sending out unwanted mail.

DRG had successfully identified and developed several target markets, including Veterans, credit card holders, credit union members, and senior citizens. At the end of 1991, the Marketing Department was organized to concentrate on DRG's key market segment; Veterans, nonveterans, or the broad market; and sponsored markets (**Exhibit 4**). DRG's largest and most successful target-marketing program was the one geared toward the Veterans market. A very popular life insurance product in the late 1980s was a "dollar-a-week" term insurance product marketed to both the Veterans market and the broad market. DRG had also been very successful in marketing a Medicare supplement policy to senior citizens. DRG's Medicare supplement policy was an acknowledged industry leader and was labeled a "best buy" by *Consumer Reports* in 1989.

In 1988, DRG implemented the Personal Service Representative (PSR) program to better meet the needs of the senior market. There were eight PSR teams, each of which included three to five teleservice representatives. Each Medicare-supplement policy holder was assigned to one of the teams. Roe Lombardi, manager of the PSR, described the relationship of the PSR and customer.

There is very little that the PSRs won't do for the customer. We have been known to call Social Security and Medicare on behalf of a customer, if that was necessary. We will also call family members to discuss the mechanics of our policies.

Our objective is to forge a relationship with each of our customers. The first call from the PSR to the customer occurs approximately three weeks after the policy is issued. A member of the team calls the customer to introduce the team and to make sure the customer understands the product.

Some of our customers rely heavily on the PSR. One of the most poignant examples is an instance in which a customer was having a heart attack and called someone he knew and trusted, the PSR. The PSR called for an ambulance, contacted a family member, and stayed on the phone with the customer until help arrived.

Many PSR customers wrote letters to DRG senior management to express their enthusiasm for the service provided by the PSRs.

Information Technology (IT)

Information technology was a critical resource exploited by most areas within DRG. It was crucial to those in marketing to enable the development of mailing lists for mail campaigns. It was important for the telemarketing area because IT made it possible to quickly capture customer information so that product information could be mailed to that customer. Similarly, it was imperative that customer service representatives be able to access customer policy information while the customer was on the phone.

Traditionally DRG's applications were product focused and aligned with the DRG's functional organization. As such, there were few links between systems, and it was not possible to create a view of DRG relationships with any one customer.

DRG operated in an IBM mainframe environment with a CPU that could process 65 million instructions per second (MIPS). In 1989, DRG made a decision to install an IBM DB2 relational database. At the end of 1991, its database consumed more than 100 gigabytes of disk storage and included information on more than 15 million customers and prospects.

At the end of 1991, DRG had completed the consolidation of the World Wide Web and National Liberty data centers. The DRG data center was scheduled to be consolidated into the CHC corporate data center in early 1992.

Human Resources

DRG's traditional human resources policies were similar to what would have been found in any organization during the 1980s. Employees were hired into a functional area to perform a task, and were compensated as individual contributors based on a merit review system. Training was minimal. Most employees learned by doing and were not encouraged to gain knowledge of multiple functions or related processes. Functional experts were rewarded with promotions into management positions within their respective areas.

The Need for Change

In the period 1987 to 1988, DRG's management noted some alarming trends with respect to its financial measures. Margins had declined because underwriting risks, problems with persistency, and higher costs to acquire new customers. Further, sales were no longer enough to offset lapsed policies, let alone grow the business.

Changes in the marketplace and issues raised by regulators in the late 1980s further underscored a need for change. Godwin noted,

Regulators were clamping down hard on the use of celebrity endorsers, which just about every direct-response company, including National Liberty, relied on to move policies. This controversy made front page news and, frankly, made the use of celebrities in September 11, 1995 our advertising more trouble than it was worth. And, consumer mail boxes were overflowing, and our creative, well-designed pitches were more and more likely to hit the trash unopened. Further, markets were beginning to fragment as customers demanded more individual attention.

And so there we were, the quintessential mass marketer, with no mass market.

By 1990, five key areas of performance, referred to as imperatives, had been identified: profitable sales, customer retention, claims management, expense control, and reengineering. DRG senior management concluded that accomplishment of the imperatives would enable the best chance of realizing the DRG vision.

Accomplishment of the reengineering imperative was viewed as critical to achieving the others. Phelps explained,

We felt that to really accomplish our vision, we would have to redefine how we approach our customers from both a sales and service perspective. Very basically, reengineering is an umbrella for a series of projects, pilots, prototypes, and tests through which we will build the new business model to support our customer-driven, profit-driven goals.

Reengineering DRG

DRG began the process of reengineering during the autumn of 1990. Reengineering was not viewed as one project, but as an umbrella for a series of projects, pilots, prototypes, and tests in which successes could be quickly built upon and failures could be learned from and quickly discarded.

According to Godwin,

Our first major initiative under the reengineering umbrella was a cultural audit that has given us a critical base point for understanding employee attitudes. We recognized that it would be impossible to reengineer our systems and processes without an understanding of the cultural barriers—the people issues—that might stand in our way.

Exhibit 6 summarizes the "cultural rules of DRG" highlighted by employees during the cultural audit. "Issues highlighted by the cultural audit contributed to some major changes that are under way in human resource management," noted Chandler.

We're redesigning our promotion and reward systems. In the future, compensation will be based on job skills, willingness to continue to learn and develop, and the ability to function in a team environment. Our new job-evaluation system will motivate people to develop a wider array of skills. Goal sharing will tie individual rewards to the performance of the team and the corporation as a whole. Further, our training and development programs have been revamped to feature a wide array of courses designed to support life in a team-based environment and to support the redeployment of people.

The second stage of the reengineering initiative was the development of a new business model, which described how DRG would approach customers from both a sales and service perspective. The third stage involved changes to the systems and processes underlying the business.

The New Business Model

A cross-functional, multilevel team of six DRG employees worked with representatives from a management consulting firm to develop a *New Business Model* (Exhibit 7), which was to guide the organization's transformation. This model was completed in April 1991.

The new business model highlighted a dual focus: customer management and market management. As shown in Exhibit 7, the two halves of the model formed a "figure eight," with information flowing between the customer and market management areas.

The bottom loop, the customer management area, was where DRG would deliver the new level of responsive, personalized service they felt their customers wanted. The customer-management organization was responsible for building the capability to provide personalized service and sales to individual customers. It would have responsibility to close all sales to new customers and existing customers. Customer management was described as the "I Know for Sure" part of the model, because that was where DRG employees talked directly to its customers to learn about their needs and how DRG could address those needs.

Market management, the top half of the figure eight, was responsible for taking the information DRG collected from customers, as well as that gathered from outside sources, and using it to identify leads for profitable new business. Those working in the market management area would develop new markets and new products for both the life/health and property/casualty businesses. Because this segment was based on hypotheses about the aggregate marketplace, it was referred to as the "I Think I Know" part of the model.

A DRG internal document that described the New Business Model highlighted the importance of prototyping to the reengineering process.

The process of prototyping serves as a catalyst to cultural change and enables us to test ideas as we develop them prior to making substantial investments in technology and our organization. Prototype ideas are derived from the critical elements of the New Business Model. They are being examined rigorously to determine their viability in our business from two perspectives: "Will it work?" and "Will it pay?" We will continue to refine, adapt, and add to these ideas continually during the next several years.

Prototypes planned and under way to enable the implementation of the New Business Model are summarized in Exhibit 8. Following is a discussion of the customer management team (CMT) and market management team (MMT) pilots.

The Customer Management Team

DRG began to pilot its customer management team concept in September 1991. The CMT was viewed as the centerpiece of the customer-driven strategy; a critical component that would enable DRG to move from its product-driven, mass marketing strategy to a customer-driven strategy of "caring, listening, satisfying . . . one by one."

The first CMT provided sales and service to a group of 40,000 customers from the Veterans business in 16 states where DRG marketed life, health, and property and casualty

products. The CMT sold those customers new products, provided some services directly (such as policy changes), and served as an interface and advocate when other departments provided services, such as claims or underwriting. A CMT member recounted an opportunity to serve as an advocate for a customer.

A customer whose policy had lapsed five month ago called and wanted the policy reinstated. I was told that it would take one month to pull the customer's file so that we could determine the premiums due! Well, that wasn't good enough! I spoke to a number of people and was able to get back to the customer in three days!!

CMT members were selected and trained specifically for this program. The team consisted of ten insurance agents who had worked in the DRG telemarketing area and were, therefore, licensed to sell the insurance products. In addition to the ten agents, the team included one member from the marketing, operations, and systems areas. All were trained intensively in the new customer service philosophy and procedures that the pilot was testing.

The team's first calls were generated by a letter telling customers they were being assigned to a specific customer team that would handle all their insurance needs. "We were surprised by the number of calls we received during the first few weeks of the CMT," noted Banta, who was responsible for the CMT.

Our customers were overwhelmingly positive . . . they're very interested in this approach.

The CMT members are focused on (1) meeting the customers needs and (2) producing financial results. As such, when a customer calls in, the CMT member should serve the customer, get additional information about the customer (e.g., income, upcoming events which would trigger an insurance need, referrals), discuss insurance needs, and make a proposal/sale, if appropriate.

The online IT system that supported the CMT was one of DRG's first attempts to support teleservice representatives with a client/server architecture. The system that was developed allowed the CMT member to initiate multiple windows and therefore access a number of systems simultaneously. For example, in the hypothetical example described earlier in which a customer called to request an address change for his/her life insurance policy, the CMT member could access the Life 70 system and retrieve the name and address information associated with the customer's policy. The CMT member could then open a second window to submit an action request to change the customer's address. Similarly, a third window could be opened to take an application for the home owner's policy that was proposed by the CMT member.

Banta described the new IT system:

At this point, we have tried to make our old transaction systems more accessible by making them available in a windows environment where one can simultaneously log onto multiple systems. The old transaction-based systems are still unfriendly and often cumbersome to use, but the additional access to information has made it possible for the CMT members to be responsive to customer requests.

We occasionally suffer from windows clutter . . . it is easy to get to the point where you have too many windows open and you lose your way. That's an area that needs work.

CMTs were expected to be entrepreneurial. The plan was that, where feasible, teams would be self-managing and report to a CMT manager who would be responsible for several CMTs. As such, DRG explored the feasibility of having the teams, under the direction of a CMT manager, set and manage individual goals, team revenue and profitability goals, and team incentives. It was anticipated that CMTs would take the opportunity to explore and introduce unique CMT behaviors, tools, and techniques to further their contribution to DRG.

The Market Management Team

Market management focused on information about individuals that had been aggregated to understand the market and guide the CMTs to the most desirable customers. The five critical activities of market management were: (1) aggregation of individual information from internal and external sources; (2) dynamic segmentation and analysis of market trends and opportunities; (3) identification of the basis for competitive advantage for each chosen market segment and development of the marketing strategies and plans for those segments; (4) matching of segment needs with specific product benefits; (5) delivery to the CMTs of high-value leads with needs and product benefits identified.

A market management team pilot was also started in the fall of 1991. Farrow described the objective of the MMT.

There are two objectives of the market management team pilot. First, we want to determine how market management will behave in the future, particularly how it will interact with CMTs. To that end, MMT members are working with the information collected from customers through the CMT, as well as data that we get from outside sources and are using these data to generate leads for profitable new businesses. MMT's second objective is to identify new market opportunities—new products, new market segments that fit with our strategy, or new opportunities for partnerships with other organizations.

The data from outside sources to which the MMT had access were provided by the organization headed by Dan Snyder, senior vice president, Marketing Information and Underwriting Systems. Snyder's group had responsibility for the marketing database, which included more than 15 million customer records and external data from Equifax Microvision, MRI, SRI, and Donnelly Marketing, to name a few. The database allowed for the identification of market segments displaying promising characteristics of long-term growth and facilitated market research, predictive modeling, and so on. Snyder noted,

My organization's mission is to provide the tools that will allow us to understand who our current and potential customers are based on a variety of demographic and psychographic data which go beyond those used by traditional mass marketers. Armed with that data, we will be positioned to tailor products to our target market segments.

What I am describing is not traditional mass marketing. Rather, we are trying to focus on the individual—individual service and individually designed products. We are trying to merge the customer approach with the efficiency of mass marketing.

Redesigning Business Processes

Exhibit 8 summarizes the projects planned and under way at the end of 1991 to redesign critical DRG business processes. DRG management expected to begin to realize quantifiable benefits from these initiatives in 1992 through expense reductions, sales increases, and improvements in customer retention and claims management.

The claims processing, life/health applications processing, and mail- and correspondence-handling projects were related to customer logistics. "Expert service teams" (i.e., teams of experts) related to applications processing and claims management were planned to support CMTs and MMTs in the New Business Model environment. Prototype teams for applications processing and claims management were under way at the end of 1991.

Life/Health Applications Processing Prototype

Applications processing was an important area for DRG and all life insurers. A life insurance application and supplemental information that could be pulled on an applicant from the medical information board (MIB) suggested the degree of underwriting risks associated with each policy applicant.

In 1991, DRG processed more than 600,000 life and more than 400,000 accident and health applications. According to Suzanne Munley, applications processing manager, in routine cases, DRG sought to respond to a customer's insurance application within 10 days. Munley described the objective of reengineering,

We are redesigning our work flow for both underwritten and non-underwritten products. Today, the applications-processing area is very specialized, with one group focused on contacting the customer by phone, another area responsible for interfacing with outside sources, for example, doctors or the MIB, and another for making a decision on the application. In the future, we plan to have individual case workers who "own" customers until the issue decision is made. The intent is not only to eliminate hand-offs and duplicate work, but also to provide an underwriter with much more information on the applicant so that better risk analysis can be performed.

Some of the information entry and inquiry screens currently being designed for the CMTs prompt agents to collect data relevant to underwriting decisions directly from the customer, as a normal part of a conversation.

Claims Management Prototype

Marty Renninger, senior vice president, Life/Health Operations, described the claims management system that was under development.

The new claims system will allow us to significantly restructure the work in this area. In the future a nonclaims expert—perhaps a CMT member—will be able to take claims information over the phone from the customer. The computer will be able to approve those straightforward cases in which documentation to support the claim exists in our files. The system's "intelligence" will also make it possible for us to more easily identify speculators (those who submit repeated or fraudulent claims). We will need to involve the claims examiners only in the more difficult cases.

The claims management prototype was a personal computer, client/server-based system that would add an "automated adjudication module" to the existing claims system. This module would allow the system to make decisions on simple claims and refer complicated claims to an examiner for research. The new system was also expected to enable communication with other DRG areas, such as underwriting, or with the CMT.

The Role of Information Systems

DRG executives believed that availability and access to information would be the critical enabler of the New Business Model. Therefore, information technology was viewed as a key facilitator to becoming a high-service, cost-effective provider of insurance and other financial products and services.

A reorganization of the information services division (ISD) in the fall of 1991 by Ed Novak, senior vice president, Information Systems, sought to realign ISD to maximize support of DRG's customer-driven business model (**Exhibit 9**). The objectives for ISD at the end of 1991 are summarized in **Exhibit 10**.

ISD was committed to supporting all of the aforementioned reengineering projects. Another major ISD reengineering initiative at the end of 1991 was the definition and support of the customer information channel (CIC). The objective of the CIC was to provide the user an easy-to-use workstation that allowed access to information in formats appropriate to their needs.

The CIC supported distributed customer databases and application systems. Upon rollout, each CMT would have its own "copy" of the "core" applications and own and manage all the information about its customers. The architecture provided to the CMT was to provide: (1) fail-safe business operation at the CMT level, (2) standard core systems available for all functions, (3) modularity to support constant and transformational business improvements, (4) broad abilities to customize at the end-user's location; and (5) modular simplicity of technology.

Novak described the strategy of ISD:

We must be able to quickly develop systems that provide the functionality required by the business. To that end, we have tried to divide initiatives into manageable chunks and have begun to use a number of tools that are available in a PC LAN environment and that make it possible for us to rapidly develop systems.

Clearly, we do not have the time to rewrite all of our old systems. Instead, we are trying to develop new client/server architecture-based systems that work around the weaknesses in our core systems.

Human Resources

A significant implication of the reengineering initiative was a move from a focus on individual contributors to more team-based work. Further, it was expected that, where appropriate, teams would be self-managing and therefore control many aspects of team life, including the setting and monitoring of goals, work assignments and work schedules.

In 1992, DRG introduced a "Total Rewards" program, which would radically change the way DRG compensated its employees. The programs had two major objectives: to empower employees to transform DRG into the company described in its vision, and to reward (at a rate higher than the industry average, assuming results higher than industry average) the people who made the transformation happen.

There were five parts to the DRG Total Rewards program: (1) **Base pay**—An individual's base pay would be set by comparing the value of the job with similar jobs at other companies. Base pay would increase as the individual of team increased his/her value to the company by adding new job skills and improving performance; (2) **Goal sharing**—The goal-sharing component sought to compensate an individual for helping DRG reach its goals; (3) **Performance management and development**—Performance management and development would reward individuals for setting and reaching their own objectives as well as team objectives; (4) **Benefits**—The flexible benefits program would provide cost-effective protection for DRG employees and their families in light of their unique needs; and (5) **Recognition**—Finally, monetary rewards and other gifts would provide recognition when an individual's or team's work, suggestions, or actions exceeded expectations.

Phelps commented on the move to the Total Reward program,

We believe that Total Rewards will help to shape us into the customer-driven DRG that we hope to become. We understand that the move to this new compensation structure, which encourages employees to expand their skills and knowledge of our business and to innovate, will be intimidating to some . . . but as we move forward, we need all our employees to be committed to changing, growing, and learning.

Managing Change

"We're taking a modular approach to allow for constant change and improvements," noted Godwin.

We're handling each of our reengineering efforts in manageable pieces to learn quickly and cheaply if we're on the right track. When we're correct, we will integrate our learnings right away into as many parts of the organization as they apply.

This theory of developing and testing is possible only because of the partnership we have forged with our information systems people. Plus, when we test in small manageable chunks, we're able to run our prototypes on personal computers—and by avoiding the mainframe environment, we shorten development time and reduce significantly the costs of a test.

Reengineering is nothing less than massive redesign of DRG's entire infrastructure. And it all has to be done while supporting the current business. It is a process that could be overwhelming but we have been learning by doing in manageable chunks. It's amazing how much you can get done if you break a huge challenge down into manageable pieces.

Exhibit 1 DRG Vision

OUR VISION

Caring, Listening, Satisfying . . . One by One

Each of us is devoted to satisfying the financial concerns of every member of our customer family by:

- deeply caring about and understanding each member's unique financial concerns.
- providing value through products and services that meet each member's financial concerns.
- responding with the clear information, personal attention and respect to which each member is entitled.
- nurturing an enduring relationship that earns each member's loyalty and recommendation.

To carry out our vision we must:

- find and serve people who have a strong sense of affiliation, reaching them through new or existing membership groups.
- provide our members with a broad range of insurance and savings products.
- communicate personally with each member through direct response, emphasizing telephone and technology to build close relationships.

Our unmatched spirit of dedication to member satisfaction sets us apart. It is the promise on which current members rely, to which new members are attracted, and by which each of us lives.

Exhibit 2 Capital Holding Corporation - Financial Summary and Description of Business Units

Financial Summary

In millions:	1991	1990
Total revenues	\$2,670.7	\$ 2,577.3
Net Income	250.2	166.2
Shareholders' equity	1,930.9	1,552.5
Assets	18,873.0	16,668.5

Description of Business Units

Agency Group Premium Income: \$374 million Revenues: \$663 million Pretax Earnings: \$169.5 million Margin on policy holder reserves-life: 9.2% Margin on premiums-health: 2.0%	A major "home service" provider of life and health insurance to middle-income households in the Southeast and Mid-Atlantic states. 3,000 representatives serve this market, with traditional whole-life and interest-sensitive insurance products and service designed to meet customers' ongoing needs, based on income levels.
Direct Response Group Premium Income: \$568 million Revenues: \$654 million Pretax Earnings: \$74 million Margin on premium-life: 17.3% Margin on premium-health: 18.2% P&C pretax earnings: \$1.2M	DRG offers a wide range of whole-life plans, term-life plans, various accident and health plans, including hospital indemnity, automobile, homeowners, and personal umbrella liability insurance.
Accumulation & Investment Group Customer Deposits: \$10.2 billion Revenues: \$887 million Pretax Earnings: \$80 million Margin on mean deposits: 1.15%	AIG seeks to develop differentiated products for targeted market niches in which it can price appropriately for the risks assumed and maintain low operating costs. Institutional products include Guaranteed Investment Contracts (GICs) that are indexed to published market rates. Retail products include single- and flexible-premium deferred annuities, as well as variable annuities, structured settlements, and pension buyouts.
Banking Group Revenues: \$451 million Pretax Earnings: \$73 million Margin on mean assets: 2.2%	First Deposit operates a direct-response consumer lending and deposit business. It uses a credit card as a vehicle to make cash loans. State-of-the-art analytical tools are used to develop and execute stringent underwriting criteria to make loans to the reliable, consistent borrower.

Source: Capital Holding 1990 Annual Report.

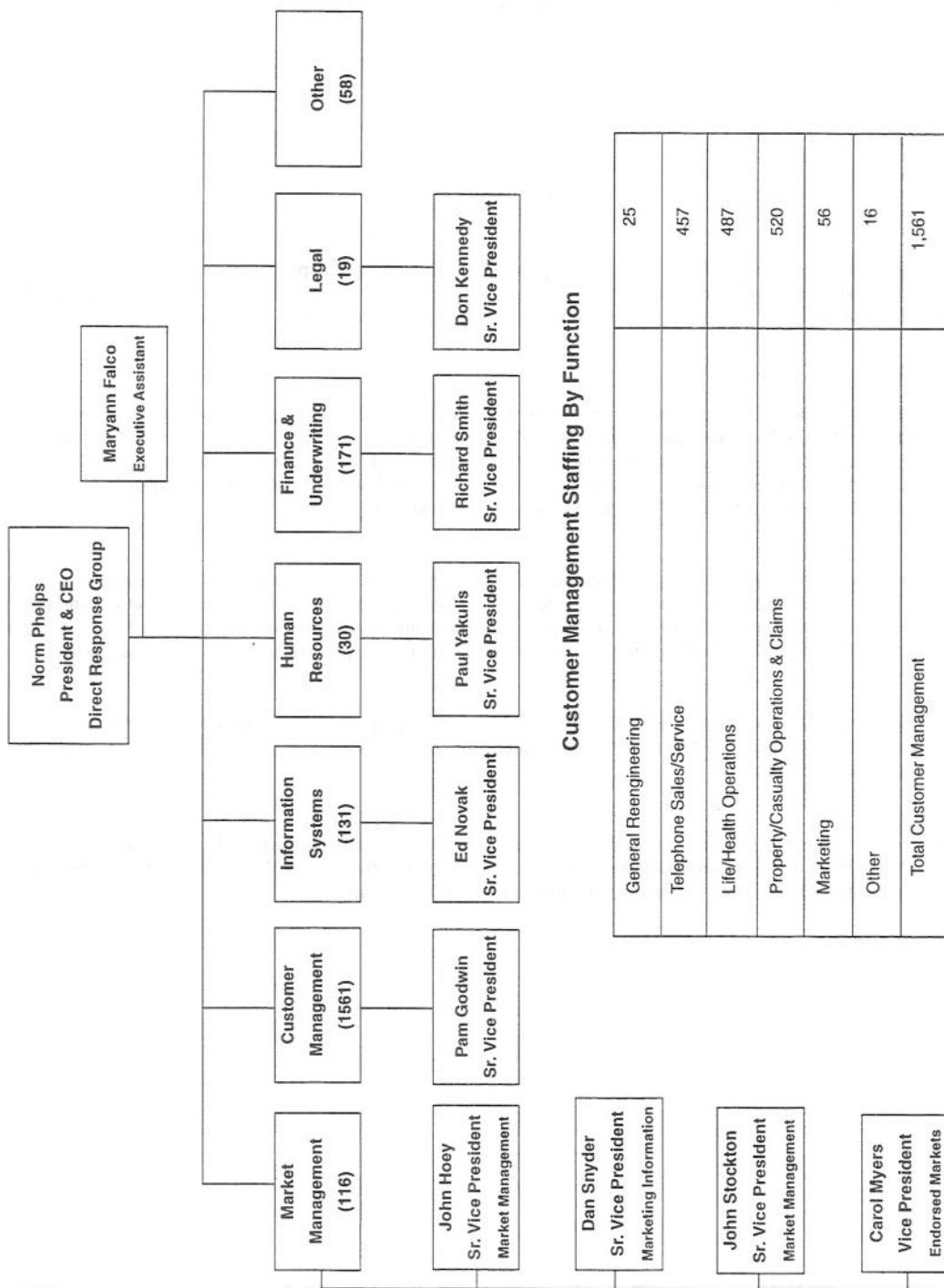


Exhibit 4 DRG Products and Markets

DRG Products

National Liberty, DRG's life and health company, offers a wide range of whole-life plans, term-life plans, and various accident and health plans, including hospital indemnity. DRG is noted for its medicare supplement insurance. Worldwide, DRG's property and casualty company offers automobile, homeowners, and personal umbrella liability insurance.

DRG Markets

	Annualized Premiums
	As of 6/91
Broad Market	86,000
Senior Services	105,000
Veterans	143,300
Endorsed Markets	68,900
P&C	137,500
Credit Union	<u>30,300</u>
	571,300

Broad Market

DRG business life and health business that is not targeted to a particular affinity group is a part of the broad market segment. Over half of the policy holders have been customers for ten years or more, and 90% of the life and 95% of the accident and health policy holders are over 40. The major portion of the customer base is clustered at the midpoint as far as wealth is concerned, with 71% having incomes in the \$20,000 to \$50,000 range.

Veterans Market

Mass-marketing techniques, including TV, direct mail, telemarketing, and alternate media (e.g., newspaper inserts, take-ones) have been used to attract customers for the Veterans market since the 1970s. The primary products sold have been supplemental insurance, low face-amount life insurance to the 50+ market, and somewhat higher underwritten life products to the under-50 market. Ninety percent of the Veterans Market customers were >40 years of age. A further breakout shows that 46% of policy holders were 40+, with incomes in the \$15,000 to \$35,000, and 30% were 40+ with income >\$35,000.

Endorsed Market

The Endorsed Market Group markets supplemental life and health insurance to credit card and deposit customers of major banks and oil companies. Because these organizations are not permitted to sell insurance on their own, they contract with National Liberty to sell products to their customers under their name. In exchange for this endorsement and the billing and collection process that is part of the program, the client earns compensation, typically in the form of an administrative fee and a marketing/list fee.

Credit Union

In 1983, National Liberty formed a joint venture with the CUNA Mutual Organization to serve the life and health insurance needs of the individual credit union member. CMIG had a virtual monopoly in the credit union market, serving nearly 97% of all credit unions with their credit life products.

Property & Casualty

A variety of property and casualty products, including automobile, homeowners, and personal umbrella liability insurance, were marketed through DRG's Worldwide Insurance Company. DRG sought to exploit the synergy that existed with the Life and Health and P&C business through targeted product matching and total customer service capabilities.

Source: Company Records.

Exhibit 5(A) DRG's Service Process Today

A High-Level Flavor of How Our Service Process Works Today

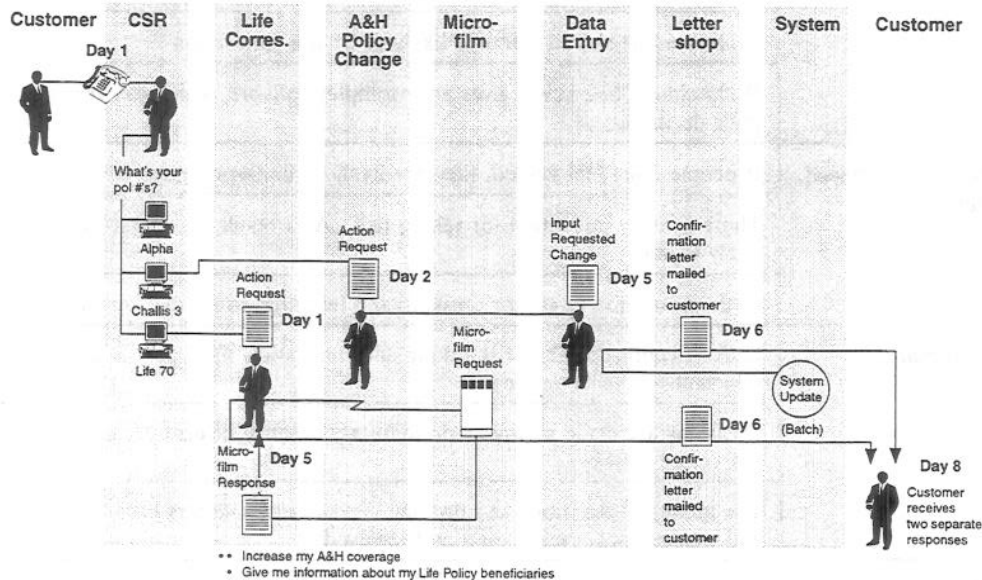


Exhibit 5(B) How DRG's Service Process Will Change

A Flavor of How Our Service Process Will Change

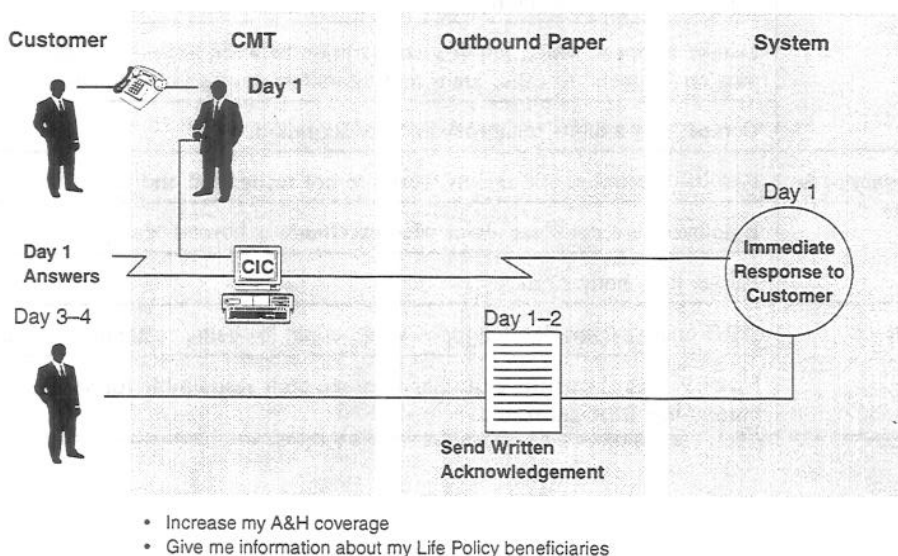


Exhibit 6 DRG Cultural Audit Findings

Underlying Assumptions or Cultural "Rules" of DRG	Implications
1. <i>You can only trust your friends</i>	Lack of trust may indicate a lack of confidence in the organization and may impede the organization's ability to implement change.
	If ideas aren't shared, there is likely to be less innovation.
	Withholding "bad news" gives an incomplete picture, which can result in poor decisions.
2. <i>Employees are overhead, not assets</i>	If people don't feel valued, they are likely to underperform.
	There is little motivation for taking risk. As a result, risk-takers are less likely to stay.
	Little motivation exists for thinking and learning within the organization
3. <i>Conflict is bad</i>	Lack of conflict inhibits risk-taking and innovation since people are reluctant to challenge ideas.
	Decisions are made slowly or prematurely because diverse opinions are not voiced.
	The quality of decisions and product/services often suffers because issues and expectations aren't raised and resolved.
4. <i>Information/knowledge is power</i>	Sometimes information is withheld to influence decision making.
	People don't feel valued, or that they are key players or part of a team—this leads to a caste system based on who's in the know.
	People may resist shared databases.
5. <i>Internal competition is healthy</i>	Lose sight that the real competition is external—develop products that compete against one another.
	Loss of business, which requires cooperation between units—they don't pass on "winners" to other areas and ultimately don't satisfy the customers.
	Competition inhibits teamwork and collaboration.
6. <i>Excellent performance is not a core value</i>	Results-orientation and quality work are not recognized and rewarded.
	Employees are not clear about what excellence is beyond "doing your job."
	People lose motivation.
7. <i>The customer is incidental</i>	DRG doesn't train, develop, or reward people for being customer-focused.
	No ones really owns the customer—no one feels responsible for service or bottom-line financial results.

Source: Company Records.

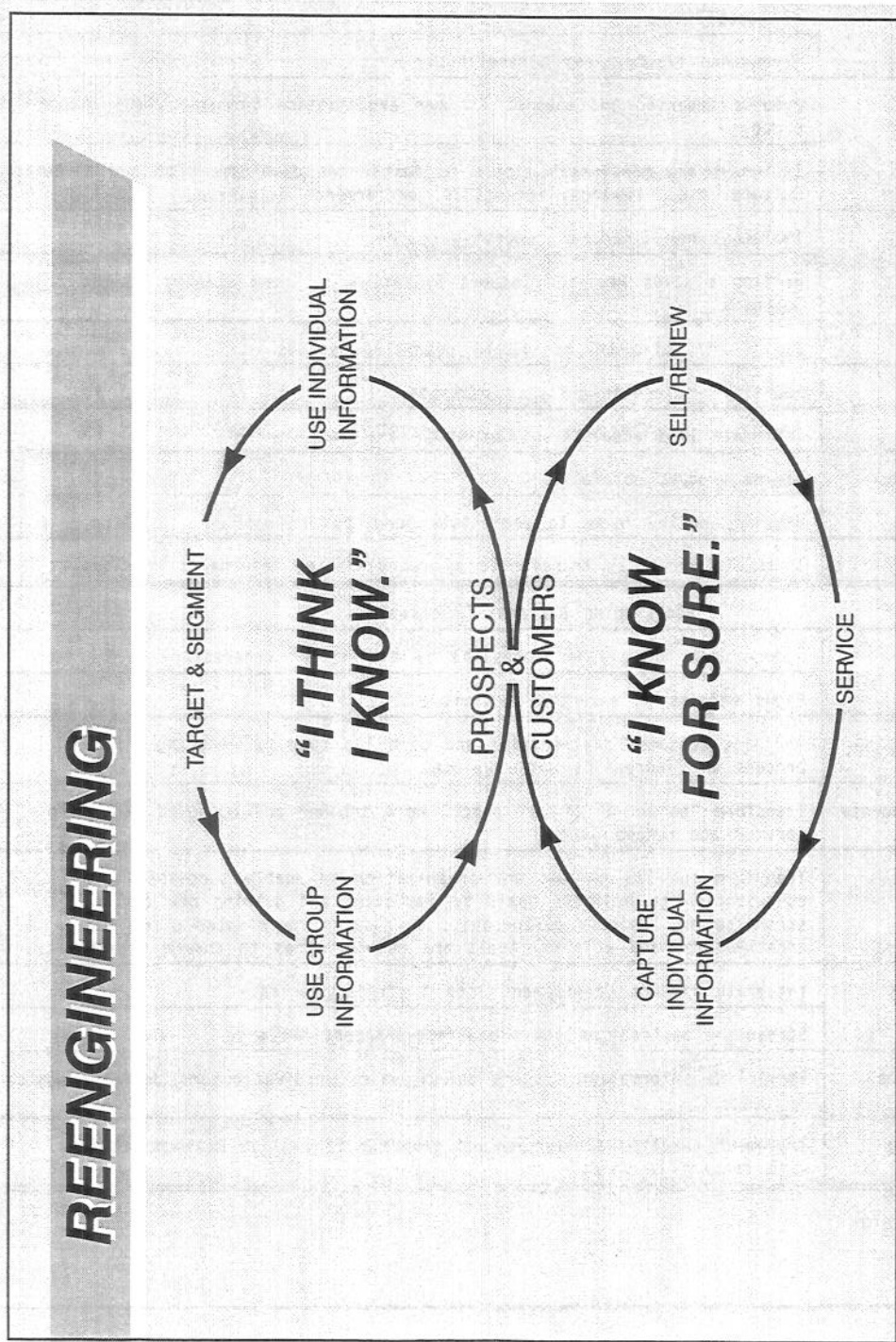


Exhibit 8 The New Business Model and Reengineering Prototypes

New Business Model Implementation	
Projects	Scope
CMT Prototype/Pilot	Prove that individualized service and needs analysis will pay.
	Rollout the model to the organization.
C-I-C Development	Design and develop C-I-C to support model by rapid and frequent roll out of capabilities.
	Strengthen I/S-Business partnership.
Human Resources	Provide training and support for the organization throughout the change process.
	Implement new management models to foster the development of our Thinking Culture, e.g., rewards, incentives, performance measures.
Financial	Implement new financial reporting system.
	Develop a sales Decision Support System, e.g., risk scoring, sales potential.
	Design and build CMT management reporting systems.
Marketing	Identify and create customer packages.
	Integrate lead acquisition, aggregate analysis.
Product Development	Define product portfolio.
	Simplify policy forms to facilitate bundling.
Customer Logistics	Integrate processes transformed by reengineering internal operations.
Redesigning Business Processes	
Claims Processing	Reduce costs of claims processing by diminishing unnecessary hand-offs.
	Focus efforts on essential activities.
Application Processing	Increase customer satisfaction and paid for rate by reducing time in process and increasing data capture.
Mail and Correspondence Handling	Transform "handling" of all paper, both inbound and outbound, to improve service and reduce costs.
ISD/ISS Renewal	Transform the I/S process and organization to enable successful contribution to business goals by improving and gaining new skills, strengthening business partnership, developing coordinated plans and architecture, and adopting tools and methodologies to ensure flexibility.
Product Development	Integrate Product Development into a single process.
	Streamline application and product-development process.
Marketing Operations Assessment	Streamline information systems to increase coordination and decrease costs.
Aggregate Marketing Pilot	Implement targeted strategies and programs to realize maximum potential with respect to sales.

Source: Company Records

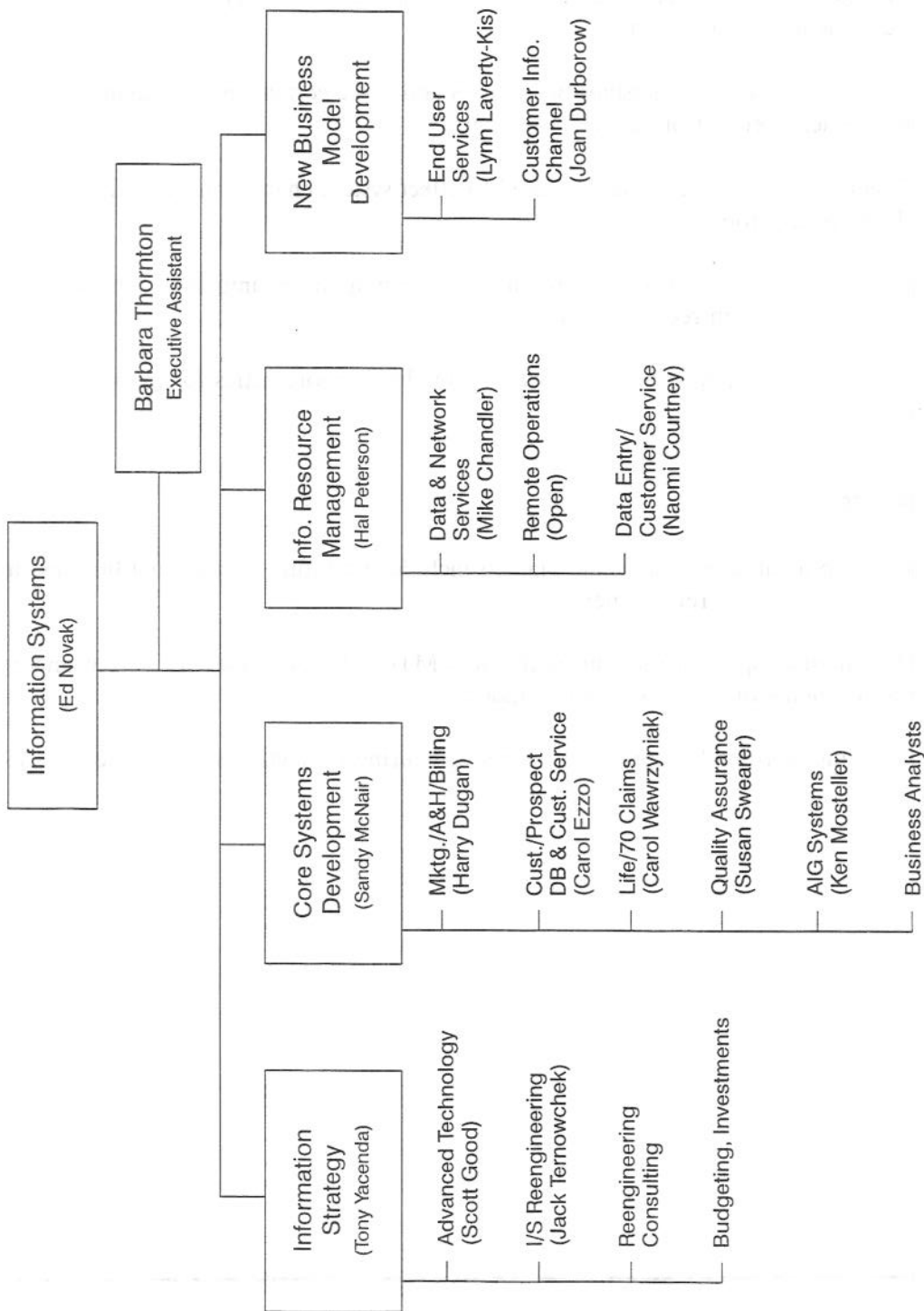


Exhibit 10 ISD Objectives and Strategies**OBJECTIVES**

1. Establish an integrated technology architecture and systems blueprint for the future.
2. Provide all the systems support and technology necessary to service the CMT/MMT business model development.
3. Establish business partnerships between IS and make certain all investments are directly tied to the achievement of business objectives.
4. Dramatically reduce the time required to effect system changes through the use of advanced development tools.
5. Leverage the use of IS to obtain order-of-magnitude improvement in basic business processes through reengineering.
6. IS will work effectively in teams, while providing opportunities for individuals to grow and develop.

STRATEGIES

1. Develop a three-year strategic plan to include the future operational business model and the supporting IS requirements.
2. IS will develop a partnership with the CMT/MMT processes to clearly understand the requirements of the new business model.
3. Continue to provide support to nonreengineering projects that are in need of IS support.

Source: Company Records.



The Transformation of IBM

IBM had a very good year in 1990. John Akers had guided his company through three major rounds of corporate restructuring since 1985, and he was proud of IBM's accomplishments. Recent product introductions were being hailed as technical breakthroughs with great market potential, the stock price had recovered, and internal morale was improving. Akers was determined that IBM be viewed as *the* world-class competitor in its field, and all the signs were pointing in the right direction—profits were growing again and IBM remained the market share leader in each of its businesses.

But after an outstanding fourth quarter, Akers had to tell his shareholders in March 1991 that operating profits would be down sharply in the latest three months as a result of lower sales in the U.S. and Europe. Concerned about the magnitude of the downturn, the competitive Akers was growing impatient with the time it was taking to transform IBM, especially the vexing problems of meeting deadlines and getting the organization to be aggressive in solving quality issues and delivering on commitments. Akers challenged his senior management team: "How do we respond to this latest decline? Should we restructure ourselves to anticipate lower growth? And how do we improve our execution?" Akers made it clear that all options should be on the table.

History of the Company

IBM's first president was the legendary Thomas J. Watson Sr. After joining the Computing Tabulating and Recording Company in 1914, Watson changed the company's name to International Business Machines in 1924 and began building one of the most successful corporations in modern history. Among Watson Sr.'s most prescient strategies was seeing the whole world as IBM's market. Between World Wars I and II, the company erected plants in Germany, France, and the U.K. and established agencies in Latin America and Asia. From the beginning, national companies were run by locals and given leeway in deciding product mix and pricing policies. Over the years, IBM's established global presence gave it a huge international installed base and the capability to tap the best human resources worldwide.

Perhaps most important to Watson Sr. was his belief that people were IBM's most valuable assets. He replaced foremen with managers who were instructed to treat workers with respect, listen to their ideas, and encourage innovation. IBM provided its employees with healthy paychecks, free insurance, and numerous benefits. Watson developed the principle of continuous learning and brought teachers into the company to help workers improve their education. Watson Sr. and his

Professors David B. Yoffie and Andrall E. Pearson prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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successor, Thomas Watson Jr., went on to create a work environment that rewarded winners and sought the highest possible standards of performance.¹ To build organizational excellence, IBM developed its "contention management" style. Every staff unit would be asked to "concur" or "non-concur" with each operating unit's plan. Dual teams were also set up to present conflicting views on key issues, after which a "shoot-out" would take place before top management. To further harness its human resources toward the development of a new product or technology, IBM established multiple groups to focus on the same project. Management then chose the winning project.

This competitive, results-oriented environment produced functional excellence. IBM became especially strong in marketing and distribution; it outmaneuvered its competition with a superior sales force that built close ties to corporate data processing managers. The IBM brand name became so powerful in the postwar period that it became a cliché to say that "no one was ever fired for buying IBM." Service, in particular, became a fetish for IBM. The company won customers by standing prepared to perform any amount of assistance the customer needed.

System/360 Despite all of these advantages, many analysts in the late 1950s viewed IBM as a conservative company that rarely pioneered new technologies. Facing an onslaught of challenges from many computer companies that were announcing newer, faster machines with lower prices, IBM changed its strategy. To counter the growing competitive threat, Watson Jr. announced the System/360 in 1964, a "bet the company" move. This system provided software compatibility across the entire family of products and enabled IBM to implement its now-famous migration strategy, moving customers up the product line without the expense of changing computer systems every time more capacity was required. It also reduced the likelihood that customers would change vendors during the upgrading process. The 360 was a bold move because it rendered obsolete IBM's highly successful 7000 and 1400 series computers—much to the chagrin of prized customers. The project cost \$5 billion over four years—the most expensive privately financed program in history. But the move was a giant success: it established IBM as *the* technical leader. The 360 stimulated significant new demand for large computers, and IBM captured almost 70% of the American market by the end of the decade. The 360 also fueled global expansion: by the early 1970s IBM had local manufacturing in every major part of the world.

Success, success, success IBM was the epitome of a growth company. By the 1980s, it was making more profits in most years than any other corporation in the world and had the highest market value (see Exhibits 1 and 2). The company could invest more in R&D, marketing, software, distribution, etc. than most of its competitors combined. It had become a world-class manufacturer, and a powerful global marketer. Moreover, IBM would come to be regarded as one of the best run companies in the world—a company with detailed financial and operational measurement systems that carefully monitored all aspects of the organization. IBM also became famous for its practice of full employment. It retrained rather than laid off employees; in 1990 alone, IBM spent \$1.1 billion on educating its work force. As a consequence of these and other policies, IBM built an unusually loyal and committed work force. Employees throughout the corporation referred to "the IBM Company" with an attitude that bordered on reverence. In fact, the company was regarded by its peers as one of America's most effective recruiters and developers of workers and managers. A 1990 survey of 142 human resource executives rated IBM the leader in every personnel area assessed, ranging from compensation to recruiting. According to the *Wall Street Journal*, "no other company came close."

Between Watson Jr. and Akers, IBM had had only three CEOs. Each was regarded, in the IBM tradition, as a strong leader and each contributed in his own way to the company's continued growth

¹ One offshoot of the Watson philosophy was the stress on the importance of integrity and loyalty and his insistence that salespeople be well-informed, in good physical shape, and well-groomed. These guidelines led to the widely commented-on "IBM uniform," consisting of a dark blue suit, white shirt, and subdued tie. While not a formal requirement in 1990, all of the executives and salespeople interviewed for this case maintained the tradition.

and development. T.V. Learson, who succeeded Tom Jr., served just two years. He was a skillful, tough operator who had earlier led the launching of the System/360. Frank Cary, who served as CEO for eight years, was credited with getting IBM into the PC business, starting the decentralization process in IBM, refocusing IBM World Trade, and shepherding the company through its disruptive antitrust suit. He also had the vision to invest in production capacity that enabled IBM to fill the burst in demand that occurred after his retirement. John Opel's four-year tenure as CEO saw the company through the transition from mainly leasing to mainly selling its products. Contemporaries regarded him as a skillful strategist and a strong implementer. Collectively, these CEOs had built a company whose dominance in products, technology, marketing, and distribution was so pervasive that one analyst observed in the 1970s, "IBM isn't the competition, it's the environment."²

IBM's Products and Competition

By the late 1980s IBM was the largest full-line producer of computers in the world. It sold about 10,000 computer hardware, software, and peripheral products in more than 130 countries. IBM was also a leading producer of typewriters, copiers, and other office equipment. One of the distinguishing characteristics of IBM was its sweeping vertical integration: its huge scale allowed it to invest more in semiconductors and software technologies than most of its competitors combined. This vertical integration gave IBM the ability to respond rapidly to shifts in technology or market trends; in addition IBM could build most of its computer product lines with proprietary technology, which produced gross margins often in excess of 70%. While IBM's hardware could be highly segmented along a dozen dimensions ranging from processing speed to price, most analysts divided the firm's product lines into three big categories:

Mainframes Almost half of IBM's business (and as much as 70–80% of its profits) came from mainframe computers, related software, and peripherals. Mainframes were large-scale computers capable of supporting large numbers of concurrent users and handling the central data processing needs of a large organization, or the needs of a smaller number of users performing extensive computations. These computers usually required the service and support of dedicated maintenance personnel. In the early days of the industry, IBM faced competition in this segment from "the Seven Dwarfs"—Sperry Rand, Control Data, Honeywell, Burroughs, General Electric, RCA, and National Cash Register. By the late 1970s IBM's competition came from the BUNCH—Burroughs, Univac, NCR, Control Data, and Honeywell. In 1990 a mainframe's price typically exceeded \$500,000. Industry analysts predicted that growth of mainframe computer revenues would slow from 5% in the 1980s to 3% through 1996.

Minicomputers A second large segment of the computer industry was minicomputers, pioneered in 1961 by the Digital Equipment Corporation (DEC). Minis supported fewer concurrent users and served the data processing needs of a large department within an organization, or the general computing needs of a small firm. These systems required limited service and support personnel and ranged in price from \$25,000 to \$500,000. IBM minicomputers (which were incompatible with its mainframes) along with DEC were the market share leaders in this segment through the 1980s, with a host of smaller competitors such as Prime Computer and Data General vying for niches. Minicomputer sales grew about 13% annually in the second half of the 1980s, but analysts predicted that revenues would shrink (and according to some, disappear) in the 1990s.

Microcomputers Microcomputers were single-user systems that were originally dedicated to a limited number of applications. IBM entered the PC market in 1981 and quickly became the standard setter (see Exhibit 3). As PCs declined in price, volumes expanded exponentially (74% CAGR, 1984–

² One consequence of IBM's dominance was an antitrust suit filed in 1969 by the Justice Department in the United States; the European Community began a similar investigation in 1977. The United States dropped its suit in 1982, and the EC settled with IBM in 1984.

89), creating the largest segment of the global computer market (over \$50 billion) by the end of the 1980s. The processing power of microcomputers also took off in the late 1980s, especially as desktop computers, known as workstations, invaded the technical engineering market.³ Prices of micro or desktop computers ranged from under \$1,000 to \$50,000.

The New Computer Technology

By the mid-1980s technological change began to blur product segments. PCs, technical workstations, and networks of PCs and workstations began encroaching on markets previously reserved for minis and mainframes. The driving force in this change was semiconductor technology, which became more powerful, less expensive, and widely available. Rather than every computer company in the world designing and building its own proprietary parts, independent suppliers provided standard building blocks. As a consequence, a wide array of companies could build machines that performed across a broad spectrum of price and performance features. Furthermore, advances in semiconductor technology came so quickly that improvements in price/performance were expanding almost fourfold every three years in the 1980s.

These developments threatened IBM's market position in multiple ways. To begin with, the new technologies required new skills. Shortening product life cycles, for example, necessitated very rapid cycle times. Next, the economic scale needed to build a computer declined, which produced an explosion of competition. Two types of competitors emerged: hundreds of small niche players; and four or five big Japanese firms. The niche players, epitomized by companies like Apple Computer, Sun Microsystems, and Compaq, were generally started and led by young, technical entrepreneurs who quickly capitalized on the new technologies in growth segments. Bolstered by creative marketing, many of these firms set speed records for reaching \$1 billion in sales and climbing the *Fortune* 500 ladder. Collectively, these niche firms were a major new force in the computer industry.

The Japanese challenge, coming from firms like NEC, Fujitsu, and Hitachi, was fundamentally different. Each firm was a huge, diversified company with ample resources to compete with IBM on a global basis. Partly sponsored by their government, giant Japanese firms attacked IBM head-on. While the computer divisions of these Japanese conglomerates remained small compared to IBM (Fujitsu was the closest with \$17 billion in computer-related sales), in 1990 they were collectively the largest semiconductor producers in the world, with market share greater than IBM in computers. In general, Japanese firms were dedicated to driving down costs and prices while improving speed and performance. Despite their size, Japanese firms remained innovative by organizing their huge businesses into small profit centers and using corporate-level "off-line" task forces extensively for major development projects. They also placed much more emphasis on harnessing existing technologies to produce better products, rather than trying to develop new technologies, the thrust of much of the U.S. computer industry's R&D efforts. While IBM insiders were impressed by the skills of the niche competitors, they were much more concerned about the threat posed by the resourceful, technically strong Japanese.⁴

³ Workstations were purchased primarily by engineers for projects that required modeling or high resolution graphics. The core technology for workstations was known as RISC (reduced instruction set computing); RISC allowed for faster processing speed compared to a PC. IBM pioneered RISC technology in the 1970s, but Sun Microsystems developed the market. Workstations used an "open" operating system, called UNIX, originally developed by AT&T. Growing from a small base, workstation sales expanded 1,093% from 1984 to 1989.

⁴ Not all Japanese firms had the same strategy: Hitachi and Fujitsu focused primarily on mainframes that were compatible with IBM but faster and cheaper, while NEC, Toshiba, and others attacked IBM in PCs. Japanese companies also grew faster (25%) than the world information processing and services market (15%). If calculated in yen, Japanese sales expanded 21%. Japanese firms also spent an average of 15% of sales on R&D.

Some competitors, especially those fighting for the desktop market in North America and Europe, promoted their hardware and software products as "open" systems rather than proprietary systems. The concept of an open system was that computers used operating systems software that conformed to industry standards, that applications were interchangeable and data could be shared among different manufacturers' systems. Open systems allowed customers greater opportunities to establish networks of different vendors' hardware and software.

Consequences of the New Technology

The move toward desktop computers and open systems had the most significant implications for computer customers. By the 1980s computers were no longer black boxes: customers increasingly understood the technology, which allowed them to place greater demands on computer manufacturers. In addition, the PC revolution put computers on the end-users' desks; gone were the days when a handful of data processing professionals in huge corporations made all the decisions. Customers were also demanding total solutions to their information needs, not just new, faster computers. The result was that growth in software and services outpaced hardware sales. By 1988 hardware was 57% and software and related services were 43% of customer spending on information processing. IBM estimated that by 1994 software and services would be 52% of spending. Finally, the geographic distribution of the computer-related sales shifted. The United States was almost half the world market for computers in the 1980s, but estimates suggested that the United States would account for only 39% of the market by 1994, while the Asia-Pacific region would be 22%, Europe 34%, and the rest of the world 5%.

The emergence of new technologies and different customer needs drastically altered the economic, technical, and human requirements for competing in the computer industry. The gap between IBM and its competitors had been narrowed significantly. At the same time, the interwoven complexities of the marketplace, customer needs, and technology made IBM a much more difficult company to manage. While spending billions on R&D, IBM was finding it increasingly hard to pick the promising growth segments, design the right products, and get them out on time. The highly centralized functional organization that served the company well in an earlier era was straining to cope with these rapid changes. Resource allocation had become a major challenge, even for a company with comparatively huge resources like IBM.

Yet despite these threats, IBM had four of its best years between 1980 and 1984. Sales reached a record of \$45.9 billion in 1984, and PAT soared to \$6.6 billion. According to some analysts, IBM's profits represented 70% of the global information industry's profits. When Opel retired as CEO in 1985, the corporation's outlook called for revenue of \$100 billion in 1990 and \$185 billion by 1994 while maintaining market share. To prepare for the boom, the company spent over \$16.5 billion on new facilities and equipment in the early 1980s, while the work force ballooned (see Exhibit 1). The plan called for continued investment in new plants to allow for the trebling of turnover. The company appeared poised for yet another burst of growth.

As Akers recalled, "I inherited in 1985 a business that was successful beyond our wildest expectations. We had a centralized, prudent, cautious organization that no one wanted to change." However, within 18 months of taking over, Akers found that change was not only desirable but a necessity. The go-go years of the early 1980s abruptly came to an end: in 1985, industry growth slowed to under 10% and IBM's growth stagnated. IBM was left with unsold inventories and underutilized plants. As a result, its asset turnover dropped sharply, and profit margins were cut in half, compared to 1980 levels.

It became clear to Akers in 1986 and early 1987 that his company was afflicted with many of the same ailments that had plagued other large American companies in the global competition. Products were coming to market more slowly than its smaller, nimbler competitors; Japanese firms were making serious inroads into a variety of IBM's markets; the firm's cost structure, premised on

15% growth, had become uncompetitive; several products, like IBM's PC Jr and its first technical workstation (the PC RT), were either poor products or inferior to other offerings; serious quality problems began to surface in both manufacturing and design; employee surveys suggested declining morale; long-standing relationships with customers were weakening; and resources seemed out of balance—industry growth was weighted toward software and markets outside of North America, but IBM's product mix in 1988 was 71% hardware with the majority of its assets, 60% of its people, and most of its R&D activities in the United States. Some features of IBM's full line also haunted management. IBM had developed its products over time, and none of its major computers systems was compatible. As IBM President Jack Kuehler commented, "It was disturbing when *Business Week* ran a cover story in 1986, saying that DEC computers worked together, and IBM's didn't."

Akers summed up the situation this way: "In the mid-1980s we asked ourselves, 'How well are we positioned?' Our answer: 'Not well at all!' Our market strength was in large hardware, whereas the market growth was taking place in software, services, and smaller machines (i.e., PCs and workstations). Furthermore, we were organized around hardware, not markets, so we weren't well set up to solve customer problems. It was clear that we needed to change IBM and find ways to facilitate constant transformation."

The Succession of John Akers

Like all of his predecessors, Akers was a product of IBM's management development process. He joined the company as a sales trainee, but early on he was identified as a potential star. In 1971 Akers was chosen to be the administrative assistant to Frank Cary, soon to be IBM's CEO. For the next ten years, Akers served in a succession of increasingly important management assignments in the product and marketing groups. By 1981 Akers rose to group executive in charge of IBM's nonmainframe businesses, and in 1985, at age 50, he was tapped to replace John Opel as the youngest CEO since Tom Watson Jr. When he assumed the role of CEO, Akers recalled, "I was particularly concerned with overhead, staff size, and the slow decision-making process. My personal experiences—my background in sales and marketing, my sense that headquarters was doing a lot of work but providing very little value added—all suggested that we needed to do things differently. But there was a pervasive attitude of 'don't tamper with success.' Initially, it was very difficult to force dramatic action in the absence of a major crisis."

Yet Akers was clearly the leader in forcing change at IBM. Over the second half of the 1980s, outsiders came to admire Akers for his openness, candor, and hands-on management style. Inside IBM, he was perceived as an attentive listener who asked tough questions. An IBM board member described him as "personable, forthright, while very strong." One IBM executive explained, "People like to work for John; he is a natural leader and has a great feel for our business." A voracious reader, Akers interacted with IBMers by orally responding to memos and presentations; he rarely wrote memos or letters. Not a strong believer in formal systems, he preferred to make decisions in an informal, collegial environment with his Management Committee (MC)⁵ and directly with 10–15 senior IBM executives. Akers worked comfortably with his three MC colleagues: they obviously respected one another and communicated freely as a group. He relied on them to supervise their particular areas of responsibility and to contribute their thinking on broad corporate policies. According to Kuehler, "One of John's greatest strengths is his ability to pick the best people for a particular job, give them very simple instructions, and let them figure out how to get the job done. He also follows up to see that the job is done well."

⁵ The MC was a long-standing feature of IBM management, dating back to the mid-1950s. In 1990 the MC was made up of IBM's top four executives: John Akers; IBM President Jack Kuehler—regarded as IBM's leading technologist; Mike Armstrong—a former marketer in charge of IBM World Trade, which covered all of IBM's non-U.S. business; and Frank Metz, the CFO, whose background was in finance and operations.

Starting the transformation Beginning in late 1986, Akers embarked on an ambitious program to transform the company. His basic goals over the next four years remained consistent and straightforward—"enhance customer relationships; improve product competitiveness; and strengthen structural efficiency"—without abrogating IBM's historic full employment practice. To implement this strategy, he initiated three major "rounds" of action.

In Round One, begun in 1987, Akers took steps to streamline the product line, reduce capacity, and realign human resources. As part of this process, 10,000 U.S. employees opted for early retirement in 1987, representing a savings of \$500 million in personnel costs; IBM also closed a number of U.S. factories and redeployed another 8,000 U.S. employees into new jobs, mainly in sales and customer contact. Akers also launched a campaign entitled "The Year of the Customer" the preeminent feature of which was a series of forums where key customers were informed and consulted on IBM's plans. Customers responded candidly to these conferences. Many were positive, but complaints ranged from IBM's need for "more integrated systems" to the "disruptiveness" of constant changes of IBM sales personnel.

Complementing this effort was Akers' soul-searching process of trying to uncover why IBM was no longer growing as it had been in the early 1980s. After more than six months of in-depth study, the conclusion was that IBM was largely responsible for its own downturn, and the biggest problems were in the United States. IBM senior management concluded that the key problem was ineffective execution and the inability to offer "complete business solutions."

During Round Two in early 1988, Akers enacted a sweeping reorganization of the entire company. The new organization, which can be seen in **Exhibit 4**, was designed to put more emphasis on markets and less on hardware, improve coordination, fix responsibility for results, and decentralize authority. In this way, Akers hoped to speed up the process of selecting the right target markets, develop competitively superior products (and services), and get products to market sooner than the competition.

The major changes involved in the reorganization were:

- Creating three product development lines of business (LOBs) called Personal Systems, Application Business Systems, and Enterprise Systems with primary responsibility for worldwide R&D and U.S. manufacturing. While each LOB had its own hardware responsibility—essentially PCs, minis and mainframes—their overriding job was to develop IBM's position in their assigned market segments. These three LOBs became cost, quality, and technology centers.
- Forming three LOBs that would provide software and components to the product development LOBs. The Communication Systems and Programming Systems LOBs developed tools that integrated IBM's product lines,⁶ and the Technology Products LOB was responsible for developing and manufacturing semiconductors (for internal IBM use). All three were expected to maintain IBM's technical leadership in their assigned areas.
- Creating the U.S. Marketing and Services Group (US-M&S), which would have sales and profit responsibility for all IBM hardware and software products sold in the U.S. Within this group, an Applications Solutions (AS) LOB was set up to serve two key worldwide functions: (1) provide optimum customer solutions by

⁶ The communications group developed software and hardware tools that would allow IBM products to "talk" with each other. The programming systems group developed data base programs and devised software protocols, including SAA (Systems Application Architecture), which would allow programmers to write applications that could be transferred among IBM machines.

either making, buying, or allying with outside vendors; and (2) translate customer needs into product requirements.

- Appointing an assistant general manager (AGM) of marketing to each of the product development LOBs to facilitate greater coordination between marketing and R&D. The AGM's job was to make sure that worldwide marketing and service were working cooperatively with the LOBs on IBM's top priorities.
- Keeping IBM's international operations largely intact, with three geographic units responsible for sales, manufacturing, and profits of all IBM products in their assigned territories. Akers felt that country managers were generally more profit-conscious and results-oriented than their domestic counterparts.
- Redefining the corporate staff's role to serve as the MC's personal staff and put less emphasis on second-guessing, staff approvals, and contention. The size of the staff was cut by 75%.

Ideally, Akers and his key associates would have preferred a simpler organization with a few self-contained profit centers. However, they were unable to divide IBM's broad product line in that way because of the tight interdependence among the various product and service groups. For example, Technology Products serviced all three product development LOBs; if each LOB made or purchased its own semiconductors, scale economies would be lost.

The role of the MC also changed in this new organization. The head of IBM US—not the MC—would be responsible for resolving conflicts among the LOBs. To further force decentralization, Akers cut the number of MC meetings to about two half days per week. Very few operational issues were now debated; the MC primarily focused mainly on strategic issues, finance and resource allocation, major product and marketing issues, and human resources (see **Exhibit 7B**). In addition, the MC met monthly with the heads of the three largest geographic regions, and every 90 days with the senior LOB executives. The purpose of the reviews, as Akers described them, “was to have an informal setting to report on what problems they encountered, what problems they had solved, and what help the MC could be.” Kuehler emphasized that “we not only expect to hear about issues, we also expect that the LOBs are already taking the initiative to deal with them.” This new organization delegated downward more responsibility, including flexibility on pricing and packaging of systems. At the same time, the hope was to stamp out bureaucracy and create more local innovation and entrepreneurial behavior.

Finally, Round Two involved more downsizing and shifting of personnel out of staff jobs: since 1986, total employment had dropped by 20,000 through attrition and more early retirements, while the total marketing, programmers, and other “direct” employees were up 21,000. (“Direct” was defined as “those who design, develop, build, sell and service and their first line managers.” “Indirect” was considered overhead.) Akers made speeches around the company, telling his employees, “The jobs that are the most fun in IBM are those which contribute directly to added value, and if you don't have one of those jobs, you'd better find one.” This process improved productivity per employee to \$154,000 in 1989. (By comparison, Fujitsu, Hitachi, and NEC's sales per employee were \$182,000, \$186,000, and \$238,000 respectively; Apple, Compaq and Sun's sales per employee were \$364,000, \$296,000, and \$173,000.)⁷

Round Three, begun in 1989, sought to execute these changes in a way that would make IBM “a genuinely market-driven company.” Despite a dominant market position, a huge sales and service group, and over \$6 billion annually invested in technology, IBM was still not meeting Akers' goal to

⁷ Part of the explanation for the difference between IBM and its smaller domestic competitors was that no US desktop manufacturer was vertically integrated, and Apple subcontracted much of its production.

be the unquestioned leader in technology, quality, or service. He felt the company had become too inwardly focused. So he sought to articulate a new IBM, a market-driven company that revolved around four principles: (1) The customer (not IBM management) is the "final arbiter"; (2) "understand markets"; (3) "commit to leadership in those markets we choose to serve"; and (4) "execute with excellence across our enterprise." Akers' goal was to put IBM at the forefront of quality and customer service. The principle was to optimize the total corporation rather than individual divisions, delegate responsibility, and empower the employees. This involved several concrete steps. First, this meant greater involvement by customers and IBM's field force in defining product and service needs and quality requirements. Then new measurement systems were created throughout the corporation that were designed to emphasize quality at all levels.

Historically, IBM had been a pioneer in quality: it had established a Quality Institute and created programs that required every new product be equal to or better than existing ones. Dissatisfied with these efforts, Akers broadened the quality initiatives in Round Three. Using Motorola's success with quality as a model, IBM installed a statistical system, called six sigma, which limited defects to 3.4 per million in any product, any process, or any activity. The goal was to be a six sigma company by 1994. Moreover, IBM made it a corporate priority to win the Malcolm Baldrige National Quality Award, the U.S. government's recognition of quality. In addition to the six sigma quality program, the new measurement systems included customer satisfaction surveys, competitive benchmarks of IBM versus the competition, revenue growth, market share, employee morale and involvement, and various profitability measures, such as ROE and ROA. To give lower-level managers more profit incentives, Akers broadened the number of employees covered by stock options and bonuses. In 1990 all executives in the corporation were brought into an incentive compensation plan based on company or unit performance.

Akers also wanted to change IBM's planning system to reflect decentralization and the desire for faster decision making. According to Peter Schavoir, IBM's director of strategy, "the strategic planning process was too long, involved too many people (sometimes into the thousands), and inevitably involved too much trivia. Starting in 1990, we cut the cycle time almost in half and dramatically reduced the number of staff and line participants. We also moved away from a rigid numerical planning system to one where we offered alternative scenarios, which each geographical region had to respond to." Akers also eliminated much of the contention system. He noted that abolishing the "contention system had costs—there was less debate and higher risk—but we have had faster decision making. We simply can't spend so much time debating things and duplicating efforts in today's competitive environment."

In the process of focusing resources, IBM sold to Siemens the manufacturing and research operations of Rolm, a telecommunications subsidiary, and decided to divest copiers, satellite transmission, educational publishing, and retail stores. According to an IBM board member, Akers made it clear that "nothing is being taken for granted any longer." In August 1990 Akers took this program one step further; he announced that IBM would restructure and spin off 90% of one of its oldest businesses—typewriters, keyboards, and low-end printers. This potential spin-off illustrated the problems of breaking up IBM's interrelated product line. These products were produced in mixed plants, sold by the IBM salesforce, and accounted for as part of IBM's total product line. Most of their sales were in-house to IBM itself. Thus the new spin off would, at least initially, need to market IBM-branded products, draw on IBM technology, and rely mainly on sales to IBM to sustain its volume.

The AS LOB also developed a set of about 20 industries and product areas, like computer-aided manufacturing, where IBM would concentrate its resources. Recognizing the critical importance of mastering emerging technologies, IBM spent \$6.8 billion on R,D&E in 1989 alone, not including \$2 billion in software spending that was capitalized. Management considered its investment in software and services (38% of R&D) and advanced chip manufacturing techniques its top priorities and vital to its long-run success.

Thus by the end of 1989, IBM had shifted its strategy to focus major attention on software and services, but not at the expense of hardware. They had also reduced the scope of operations, selected target markets, and stressed product quality and innovation as IBM's key strategic drivers. Despite its streamlined business scope, however, IBM remained by far the broadest-based computer company. Company executives were convinced this broader scope and scale were significant competitive advantages.

Akers also continued the massive redeployment of thousands of employees to new direct assignments rather than laying them off. Indirect labor (47% of the work force) and the number of managers (11.4%) were further reduced. The stated goal was to bring management down another 1.4% and ultimately make 60% of the employees direct by 1993. Throughout the process of reducing and refocusing the work force, IBM's top management was committed to maintaining the full employment practice. Each MC member stressed the conviction that full employment was not just a matter of fairness; it was a key element of IBM's distinctive work environment. They freely conceded that it resulted in extra short-term personnel costs. But they were convinced this approach gave IBM a significant competitive advantage through greater worker commitment and productivity. They stressed that full employment meant no group layoffs but did not guarantee anyone a job. Implementing rigorous performance standards would ensure that poor performers were weeded out of the organization. Furthermore, to be eligible for full employment employees were expected to demonstrate flexibility (i.e., willingness to relocate, retrain, or change careers). So, in 1990 the MC planned to continue the practice as long as business results permitted and as long as it provided a competitive advantage.

In the management of technology, while Akers had delegated the main responsibility for identifying new fields to enter and developing new technologies to the LOBs, he and the MC remained broadly in charge of allocating resources among the businesses. They also, of course, decided on IBM's basic technological direction, as well as how the company would compete in each field. Akers said he felt comfortable making these kinds of decisions, despite his lack of formal technical training, because of his long experience in data processing and his ready access to technical experts like Kuehler. One of the transformation's biggest surprises to outsiders was that IBM management abandoned a hallmark of the corporation, its NIH—not invented here—philosophy. Borrowing extensively from some positive experiences of IBM Japan, LOBs began engaging in wide-ranging alliances, including equity investments, joint R&D, and licensing of technology. IBM joined forces with Siemens to develop 64 megabit DRAMs, with Toshiba to make flat panel displays, and with Motorola to develop new semiconductor production techniques, to name just a few. Starting from virtually nothing in 1988, IBM had more than 75 equity alliances by 1990. According to Kuehler, "Only five years ago, it took months of agonizing at the highest levels of the corporation before IBM would make an equity investment in one company; look at what we have done in a year, largely at the LOB level."

Akers' management style Akers' program had clearly attacked IBM's highly centralized, somewhat lethargic *modus operandi*. He emphasized his sense of urgency by a series of formal and one-on-one sessions where he and the MC had a chance to identify slippage or unnecessary delays. Yet Akers also tried to lead by personal example. He refused to allow his day to be consumed by meetings; he enjoyed talking with customers and employees in the field. While at headquarters, he worked a disciplined nine-plus-hour day, arriving at 8 a.m., leaving by 5:30 p.m., and not taking a full briefcase home on weekends. He also traveled extensively (one or two days a week) around IBM worldwide, asking managers at all levels what was going on within their operations to make them a market-driven company (see Exhibit 7A). These were not symbolic site visits, according to Akers, because he got into details; as he put it, "I asked local managers to tell me precisely their quality story and tell me precisely your product plan and where they stand." In 1990 he visited most of IBM's manufacturing and development locations.

Akers met twice each year with his entire top management team. He used these Strategic Planning Conferences as a major device to communicate new initiatives, reset priorities, and discuss

IBM's performance and competitive standing. The conference themes reflected his perspectives and priorities. In recent years they focused on subjects like superior execution, market-driven quality, managing technology, revenue growth, and cost management. Akers also used these conferences to convey his sense of impatience with the progress of IBM's transformation. For instance, at a senior management meeting in February 1989 he told management, "Right at the outset let me make clear that we're talking not about a frill or a fad [when discussing market-driven quality] but about survival. We have no choice; reality has changed and we must change with it." Then at the January 1990 meeting, he made four key points:

1. Market-driven quality begins with education and ends with education—the majority of it on the job. It is everyone's job to teach it incessantly.
2. We are still not bringing products to the market fast enough.
3. Our goal of becoming a solutions company, as measured by software growth, remains very much ahead of us.
4. We haven't yet demonstrated that we are tough-minded enough in managing costs and expenses.

And, characteristically, he assigned responsibility for implementing improvements in each area.

Akers saw one of his most important jobs as being the "corporate skeptic." This task had become especially important in recent years. He said, "In our fast-changing business, we can't afford to be overoptimistic about our strategies or capabilities. We can no longer make a bet and hope it works out. We have to be realistic from the start. That's my job—to ask questions and raise doubts about proposals to help prevent us from going too far down the wrong road as we've sometimes done in the past. As long as I probe sensitively, people understand."

The impact of Akers' initiatives As the operating divisions began to implement Akers' initiatives, the pace of IBM's transition accelerated. Some examples:

The general manager (GM) of Personal Systems made a number of significant moves. He brought "fresh blood" into his management group (from inside IBM) and raised performance standards to weed out weak performers. He mounted major programs to shorten cycle times and materially improved quality standards. The GM also took the unusual step for IBM of appointing a cross-functional task force to "fast-track" a new laptop computer.

The president of Data Systems (mainframes) addressed the division's concerns about being too much of a boss-driven, top-down organization by mounting a major attack on the work environment. The result was to "turn the organization upside down" by putting the customer on top of the organizational pyramid and senior management at the bottom. As in Personal Systems, he also focused on improving quality and shortening cycle times.

The U.S. Marketing and Services GM focused his organization on sharply improving customer service. He gave the field organization greatly increased authority to cut prices and deal more flexibly with customers. Education spending was increased in 1989 to \$400 million to upgrade the competence of the enlarged field force. The group was reorganized to reduce layers and flatten the management structure. Performance measures were revamped to focus local management on gross profit, market share, strategic priorities, and customer satisfaction—not just on sales. The GM stressed that his AS LOB—consisting of 30,000 people, 10,000 in software alone—was coming into its own. "No other company can match our commitment to offering customers hardware, software, and service solutions to their problems."

The president of IBM-Asia Pacific used the theme of market-driven quality (MDQ) to launch a number of programs. "After John Akers gave MDQ a sense of urgency in January 1989, we conveyed the message quickly. Today, measurement systems are in place and owners are responsible for MDQ initiatives. While we are currently number three in Japan (behind Fujitsu and NEC), I see an opportunity to be number two by the mid-1990s."

The president of IBM-Canada moved equally fast to improve his company's competitiveness. He redeployed staff people to line marketing jobs and focused them on new high-growth opportunities like small systems and software. He pushed down decision-making and eliminated three management layers. He set demanding ("breakthrough") goals and measured performance against them. Cross-functional off-line "rings" were set up to implement new ideas.

The Akers' initiatives were also beginning to have an effect at the regional and local levels in the United States. Empowerment (making lower-level managers feel greater responsibility for their actions and corporate performance) was especially noticeable. The GM of the Northeastern Area noted that his job was now "more like a country manager than strictly marketing. In the last year, I've become responsible for profits, not just revenues, and for the first time we are rewarding salespeople on market share and customer satisfaction." And two levels down, a branch manager expressed similar views. "Akers' vision," he said, "is being translated into the field. There is a sense of giving everyone greater responsibility and flexibility."

The View in 1990

Towards the end of 1990, IBM's top management could point to a number of accomplishments. Over the previous four years, manufacturing cycle times were down by as much as 50%; the time to produce the high-end mainframe was cut by two-thirds; and installation time for a mainframe went from a week to 16 hours. On the product front, IBM announced a new technical workstation (the RISC System/6000), which many acclaimed as a technological leader; IBM also introduced a new low-end computer (the PS/1), a user-friendly PC designed to give IBM leadership in home computers; IBM's targeting of the educational market produced significant gains against Apple (IBM's market share went from under 10% to more than 30% from 1986 to 1989); and IBM's minicomputer team was the winner of the 1990 Baldrige competition. For 1990 as a whole, shipments, revenues, and earnings all showed gains. As results improved, employee attitude surveys also reflected significant improvement, although not back to the record levels of the mid-1980s.

But naturally the transformation had its ups and downs, and IBM's visibility assured extensive press coverage of both. While many observers were favorably impressed with IBM's transition, others continued to challenge the company's effectiveness (Exhibits 5 and 6). Most criticism dealt with issues such as the pace of change and the cost of full employment rather than the substance of Akers' actions. Through 1990, Akers continued to fine-tune the transformation. To address nagging problems such as quality and cost control, he:

- Created three new staff positions to spearhead major aspects of IBM's business. First, he appointed the former GM of minicomputers to SVP-Quality; his job was to keep track of performance on MDQ worldwide and spread the best practices within IBM. Next, he appointed the former head of Technology Products to GM-Operations, IBM-USA; his job was to help allocate resources and set technological priorities for the LOBs. Finally, he appointed a corporate head of Environment to oversee IBM's company-wide efforts.
- Assigned the corporate SVP of Personnel the task of translating "market-driven quality" into operational terms and of setting up training and employee involvement sessions to convey his message deeper into the divisions. Employee

surveys had indicated middle-level managers were unclear on what the term meant or what they were expected to do differently.

- Increased the incentives for early retirement in an effort to further reduce the size of the work force by as many as 10,000.
- Instituted MC “inspections” to heighten awareness at the operating level of key corporate priorities such as quality and competitiveness.
- Challenged IBM’s management of technology at his Fall 1990 Strategic Planning Conference. Akers expressed dissatisfaction with the way new products were developed and brought to market. To spur innovation, Akers was intrigued by the notion of exploiting IBM’s “core competencies.” To pursue the idea, he brought in an outside consultant and assigned two senior managers the job of identifying and improving on IBM’s core competencies—one in the area of technology and one for marketing.
- Shifted the responsibility for developing smaller products (e.g., laptops and notebook PCs) from the U.S. to IBM-Japan.
- Announced a new policy to sell IBM products to OEM competitors in virtually all products, services, and software. This was partly defensive against the Japanese who had long been selling to OEMs, partly to utilize excess capacity in the IBM system, but also to spur more innovation.

Dealing with the 1991 Downturn

At the end of 1990, Akers believed that IBM had come a long way. But despite a record year and strong fourth quarter, he was not complacent. He commented, “I think IBM is a very different company today compared to six years ago. We are proud of what we’ve done, but we think we have a helluva long way to go. Tens of thousands of people in IBM still do not appreciate how good you have to be to be a world leader in today’s fiercely competitive environment. Our competitors are ferocious, yet our people still feel too comfortable. There are large companies and hundreds of small ones in Asia whose employees start every day focused on destroying IBM. Nonetheless, we remain the market share leader in the major segments of the computer industry. We’ve got new products in the pipeline that should bolster that position in virtually every market segment.”

Yet Akers remained worried. Warranty, software, and service costs had reached record proportions in 1990, while asset turns and ROA had not improved. When soft demand cut operating profits in the first quarter of 1991, many of Akers’ concerns crystallized. Moreover, IBM’s profit decline caught Wall Street by surprise. As a result, the stock dropped sharply. Knowledgeable insiders, such as former CEO Cary, pointed out that IBM had periodically experienced similar “surprises” in the past. According to Cary, “When the economy slips, or there is a sudden uncertainty (e.g., Iraq war), customers often defer—and sometimes even cancel—their orders for new computers.” Usually, according to Cary, these cancellations were reinstated after a few months.

Akers knew, of course, that IBM’s transformation was a moving target, especially in the computer business, where technology was constantly changing and competitors were fast-moving and highly innovative. In fact, trade press reports of announced price cuts, new products, and product improvements—including those by IBM—seemed to have reached new highs, even for the always dynamic computer industry. So he was concerned that IBM’s managers might not be responding as rapidly as necessary to environmental changes. Initial indications suggested that worldwide computer demand was indeed slowing, but IBM’s sales had slowed more than the

industry and IBM was not exploiting some of the promising growth segments, such as notebook computers and certain services.

Akers therefore asked his management to once again address the tough questions:

- Are we doing everything practical to achieve the right mix of businesses? Should we be downgrading or exiting from more slow growth segments?
- How can we better manage our resources, expenses, and assets? Have we done everything possible to streamline our cost structure? Should we retain our vertical integration? Should we adopt a global manufacturing strategy instead of our traditional localized approach?

Beyond these immediate issues, Akers also had a nagging concern about whether he and his team had done enough to ensure that IBM had in place the discipline, stress on innovation, and fast response required to be the undisputed leader.

Exhibit 1 History of IBM's Finances (\$ in millions)

	Financial Records for the Year Ending December 31,								Three Months Ending 3/31/90	Three Months Ending 3/31/91
	1970 ^a	1980 ^a	1984 ^a	1985 ^a	1986 ^a	1987 ^a	1988 ^b	1989	1990	
Total revenues ^c	7,504	26,213	45,937	50,056	51,250	54,217	59,681	62,710	69,018	13,545
Cost of prods, svcs, rentals ^c		10,149	18,919	21,103	22,706	24,610	24,648	27,701	30,723	6,337
Research & development		1,520	4,200	4,723	5,221	5,434	5,925	6,827	6,554	1,500
Selling, gen'l & admin.		8,804	11,587	13,000	15,464	16,431	19,362	21,289	20,709	4,699
Operating income ^d	1,882	5,740	11,231	11,230	7,859	7,742	8,746	6,893	11,032	1,009
Net income	1,018	3,562	6,582	6,555	4,789	5,258	5,491	3,758	6,020	(1,731) ^g
Cash, equivs & mktable secur.	1,339	2,112	4,362	5,622	7,257	6,967	6,123	4,961	4,551	6,828
Inventories	374	2,293	6,598	8,579	8,039	8,645	9,565	9,463	10,108	10,056
Net inv'ment in fixed equip	4,740	15,017	16,363	19,680	21,268	22,922	23,426	24,943	27,241	26,009
Investments & other assets ^e	410	1,761	6,070	6,884	8,797	9,746	14,268	16,916	21,407	20,258
Total assets	8,539	26,703	42,808	52,634	57,814	63,688	73,037	77,734	87,568	83,925
Current liabilities	1,877	6,526	9,640	11,433	12,743	13,377	17,387	21,700	25,276	23,023
Long-term debt	573	2,099	3,269	3,955	4,169	3,858	8,518	10,825	11,943	12,131
Shareholders' equity	5,947	16,453	26,489	31,990	34,374	38,263	39,509	38,509	42,832	39,195
Capital expenditure	2,160	6,592	5,473	6,430	4,620	4,304	5,390	6,414	6,509	1,407
Total employees	269,291	341,279	394,930	405,535	403,508	389,348	387,112	383,220	373,816	NA
Return on avg. equity ^f	18.1%	22.7%	26.5%	22.4%	14.4%	14.5%	14.9%	9.6%	14.8%	NA

Sources: IBM Financial Reports—Forms 10-k and 10-q; 1970, 1980, 1984–1989, Q1 1990, Q1 1991

NA—Not available

^aData in 1970, 1980, 1984–87 have not been restated to show 1988 change in accounting principles, (FAS 94).^b1988 net income does not include \$315 million credit for accounting change, (FAS 96).^cIBM's revenues have, since before 1970, been comprised of equipment sales, services and rentals.^dOperating income is defined here as earnings before interest and taxes.^eInvestments shown here include two major categories of financial reporting items:

1. Nonfixed long-term assets such as software development costs, sale-type leases, and goodwill.

2. Capital invested in the securities of other corporations, governments, and municipalities.

^fReturn on average equity is calculated here as net income in each year, divided by the average shareholders' equity in that year and shareholders' equity in the previous year.^gNet income for three months ending 3/31/91 reflects the adoption of new accounting rules relating to the reporting of employee benefits. Without the extraordinary item, net income for that period would have been \$532 million.

Exhibit 2 Revenues By Classification of Products and Services (in millions of dollars)

	1986	1987	1988	1989	1990E
Processors					
Mainframe	\$8,587	\$9,256	\$10,365	\$11,352	\$12,091
Est. % Gross Margin (GM)	67.5%	68.0%	68.5%	68.2%	65.5%
Midrange	4,465	4,727	4,712	4,735	5,320
Est. % GM	53.8%	52.0%	55.5%	57.3%	56.3%
PC's & Workstations	9,436	10,439	11,484	12,261	13,529
Est. % GM	48.0%	47.5%	51.5%	52.2%	51.7%
Peripherals	10,807	10,186	11,280	11,021	11,941
Est. % GM	52.2%	51.0%	58.7%	58.0%	59.0%
Maintenance	7,413	7,691	7,347	7,070	7,203
Est. % GM	58.8%	55.6%	53.2%	50.1%	50.1%
Software	5,514	6,836	7,927	8,424	9,910
Est. % GM	72.9%	71.4%	73.4%	68.4%	68.9%
Other	5,829	6,121	6,566	7,847	8,511
Est. % GM	34.4%	31.8%	30.9%	29.8%	29.4%
Total Revenues	52,051	55,256	59,681	62,710	68,505

Revenues And Earnings By Geographic Location (in millions of dollars)

	1986	1987	1988	1989	1990
UNITED STATES					
Revenues	\$28,420	\$29,498	\$30,271	\$31,221	27,132
Net Earnings	1,603	1,936	1,408	(325)	1,459
EUROPE/MIDDLE EAST/AFRICA					
Revenues	17,774	20,596	22,555	24,271	27,234
Net Earnings	2,267	2,209	2,349	2,676	2,977
ASIA/PACIFIC					
Revenues	6,745	8,341	10,661	10,875	9,564
Net Earnings	603	780	1,394	1,296	1,151
AMERICAS					
Revenues	3,665	4,104	5,227	6,054	5,088
Net Earnings	314	341	328	173	420
ELIMINATIONS					
Revenues	(5,354)	(7,283)	(9,033)	(9,711)	(10,282)
Net Earnings	2	(8)	12	(62)	13
CONSOLIDATED					
Revenues	51,250	55,256	59,681	62,710	69,018
Net Earnings	4,789	5,258	5,491	3,758	6,020

Sources: Revenue Breakdown by Classification: Sanford C. Bernstein & Co. Earnings Estimates dated 6/90.

Revenue Breakdown by Geographic Location: IBM Annual Reports, 1986-1989.

Exhibit 3 Global Market Share Estimates

	1985	1986	1987	1988	1989
Mainframes					
IBM	55.4%	51.4%	41.6%	40.1%	44.0%
Fujitsu	6.4	8.8	12.3	13.8	11.6
NEC	4.8	8.1	11.5	13.3	8.5
Hitachi	3.3	4.9	6.9	8.3	11.1
Unisys	7.5	7.8	5.3	3.9	4.3
Minicomputers					
IBM	20.8	17.5	18.4	18.2	29.4
Digital Equipment	9.5	11.7	15.0	15.5	11.6
Hewlett-Packard	6.3	6.4	5.6	6.2	3.3
Wang	5.2	4.7	4.2	3.8	2.5
Fujitsu	2.6	3.6	3.7	4.1	5.7
Workstations					
Sun Microsystems					21.3
Digital Equipment					17.6
H-P/Apollo					12.2
Matsushita					11.8
IBM					8.7
Personal Computers					
IBM	35.9	29.3	29.7	25.5	22.3
Apple	10.5	9.2	9.6	10.5	9.6
Compaq	3.3	3.2	5.2	7.4	7.7
Olivetti	5.8	6.6	5.0	5.1	4.1
Tandy	5.2	5.2	4.8	4.4	3.6
NEC	2.2	3.6	4.0	4.3	8.3

Source: *Datamation Magazine*, June 15 issues in 1986–1990

Exhibit 4A Abbreviated IBM Corporate Organization Chart, 1985

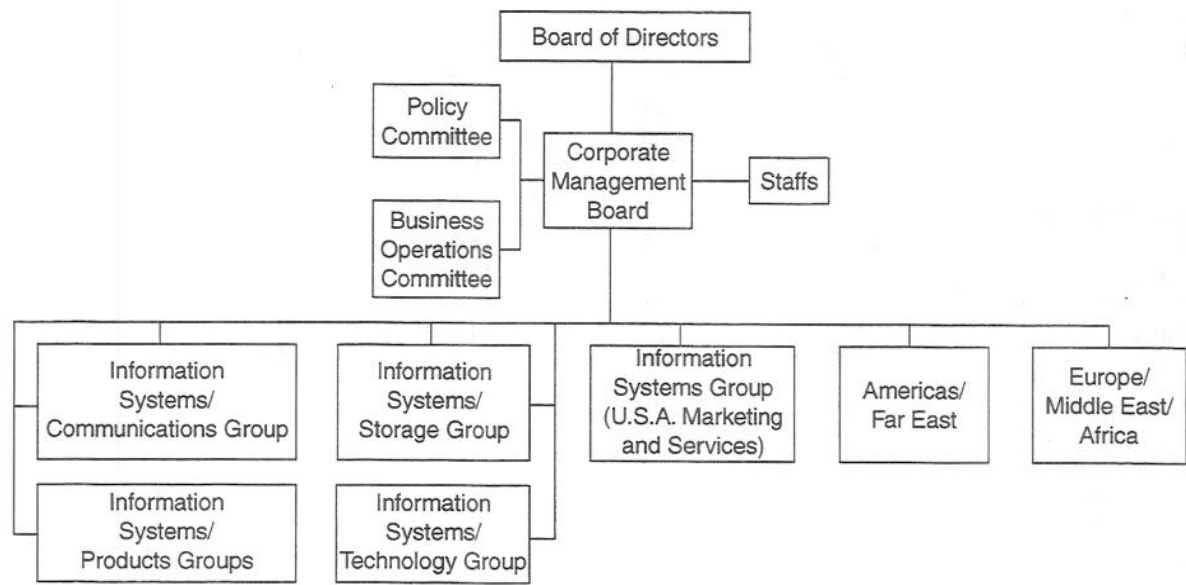


Exhibit 4B Abbreviated IBM Corporate Organization Chart, September 1990

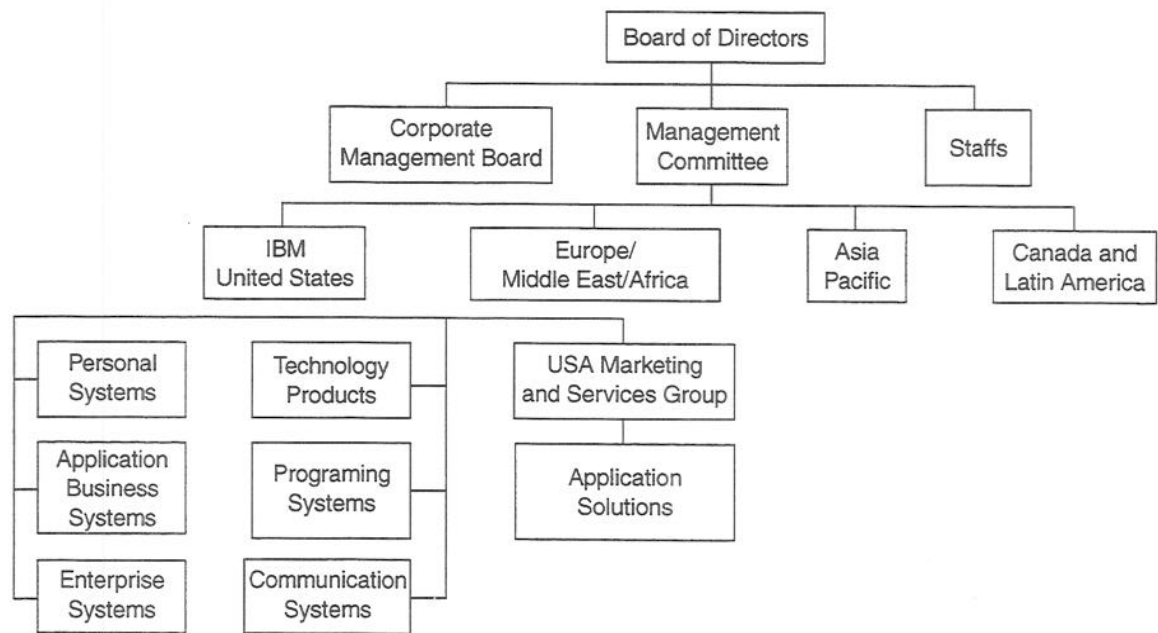


Exhibit 5 "Innovation: Advice on How IBM Can Retain Greatness"

To: John F. Akers . . .

Because you are a realist, you know that this past year can best be described as a blend of frustration and disappointment. Key shipments in mainframe disk drives slipped, software sales from the highly touted applications systems division are growing at rates less than half the industry average. . . . The only people more confused about IBM's direction than Wall Streeters are your own employees and customers. . . . You're certainly saying all the right things, but IBMers and your customers aren't hungry for rhetoric. . . . They're hungry for the opportunity to push IBM to new levels of excellence. The challenge is how? How can IBM be great as a business and information technology innovator? . . . My fear is that, much like post-Oil Shock General Motors, IBM may be a great company on the verge of losing its greatness. . . .

1. Stop treating your customers as consumers. A decade ago, IBM marketing reps could saunter onto a customer site confident that they knew more about data processing than the customer. That's no longer true. Today, your customers know more about what they need than you do. . . . Nevertheless, many of your people still behave as if Big Blue is the font of all information systems wisdom. That's as annoying as it is untrue. It's particularly annoying because the typical IBM rep now has more than 2,000 product and service offerings to keep track of; they know less and less about more and more. . . . That's an inevitable byproduct of trying to be a full-service provider. . . . Start treating your customers as people whom you can learn from as well as sell to. Create sales and engineering teams that are rewarded not only for selling systems but also for getting customers to co-develop applications that can be used industrywide. . . .

2. Be less strategic and more tactical. IBM has more strategies than NATO and the Pentagon combined. Unfortunately, the company seems unencumbered by any tactical sense. One longtime IBMer remarks that you prefer to "steer the ship and see what the market does" rather than "let the market drive these things." That's not my idea of customer-responsive. The reason is obvious: IBM moves too slowly to be tactical. Big Blue still relies more on momentum than initiative. With the notable exception of the IBM PC, product development still takes years. Technical development is not treated as urgently as sales development. . . . Shouldn't IBM be prepared to crash develop products like laptop computers that clearly have become market staples? Shouldn't you publicly champion speed to market as a virtue and change your compensation system accordingly? . . .

3. Opt for bold investments rather than bold acquisitions. You've taken bite-sized equity stakes in lots of little software firms. That's smart. Do much much more of it. . . . Have fun. Scare a few people. Why not buy 10% of Compaq Computer? Fifteen percent of Cray? Twenty percent of Stratus Computer? Buy a Macintosh software company. Send the message that you're prepared to invest in quality information technology firms anywhere in the world. You've got cash—use it. Emulate Olivetti; invest in networks of technology firms in Europe. Not only will these investments command attention, they'll give you a window on technology and management that you couldn't possibly build in-house. . . .

4. Break up IBM. It's better to be a Gorbachev than a Honecker. As recent events confirm, planned economies don't work as well as market forces. Right now, IBM's \$60-billion annual economy resembles Kremlin econometrics more than Adam Smith. Ask any IBMer who works with customers and they'll tell you they spend more time coordinating things inside the company than with the outside world. That's bad. So make a virtue of necessity. "Deregulate" IBM. Ideally, you should set up a holding company (a la Citicorp in global banking) to coordinate—not control—the efforts of multibillion-dollar IBM-ettes. Keep the key technologies like semiconductor packaging and magnetic recording in the holding company (not to mention network and telecommunications standards) but spin out the entry systems division as a stand-alone company, as well as the mainframe group, the workstation-Unix people, and the AS400 minicomputer folds. Turn your semiconductor plants loose onto the marketplace. Lead IBM as a coalition, not as a monolith. . . . Do

you run the risk of creating half a dozen weaker IBMs? Yes, but only if you don't believe that your people can handle new responsibility and added competition. In your heart and mind, you know that competition from AT&T, Apple, DEC, and Sun has made IBM a better company in the 1980s. Why not lose market share to your own companies instead of someone else's in the 1990s?

By any measure, IBM is a national asset. You have managed to keep the company's full employment practice through difficult times and you have made major commitments to support this country's technology base. Look deep into your company and you will see talented people who want to add value to both IBM and their customers. Listen to your customers and you'll hear people tell you that IBM isn't as responsive as it can be. If you do that, I think you'll agree that you have the unique opportunity to turn IBM into several great global companies. You can be the steward of a great tradition or a leader who builds a new generation of companies upon that tradition. Either way, good luck.

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Exhibit 6 Excerpts of a Letter from a Large IBM Customer (April 1990)

... Until recently IBM's organizational structure has made it very difficult for the company to provide solutions to customers' information technology problems rather than just high capacity hardware. I know they're working very hard on this, but the impression is that they still have a long way to go....

From my perspective the three primary problem areas are IBM's people, customer relations and products. I feel that the people issue has been IBM's most serious problem for some time and I do not see any major improvement on the horizon. ... Beginning eight or nine years ago, experienced, knowledgeable salesmen were replaced ... by young, inexperienced sales personnel. ... we had a succession of young sales personnel on our account who just seemed to be passing through on the way to their next promotion. They knew nothing about [our business] nor did they attempt to learn much. During the late 1980's, IBM continued its policy of "full employment" but instituted several early retirement programs. As a result of these programs, IBM lost between fifteen and twenty-five thousand of its most senior, experienced personnel. IBM lost a significant pool of talent but to make matters worse, most of them went to work for IBM's competitors.

... I have [also] seen a significant change in IBM's relations with its customers. I would characterize this as the maturing of customers and the immaturing of IBM. ... Prior to the 1980's IBM's account personnel, both sales and technical, were more knowledgeable than the customer's personnel. This knowledge leverage was used by IBM to effectively control the account ... Times have changed and now the situation is reversed. Today the customer's personnel ... are the more knowledgeable parties and the IBM personnel provide limited value-added. ... For example, at least once a month, I receive a stack of IBM announcements (sometimes more than an inch thick) which describe in infinite detail new and revised hardware products. On numerous occasions, I have requested of our IBM sales team that they only send me those which they think would relate to [our business]. This has never happened because they do not know what relates to us.

[Lastly] ... IBM is a victim of its own past success. In an effort not to alienate its customer base, IBM has been forced into support of and compatibility with technically and functionally outmoded hardware and software. This approach of being all things to all customers has created a huge IBM product line that no one can understand in any depth. What has been created is the proverbial aircraft carrier. With a huge product line and massive numbers of people and facilities who create and manufacture the products, IBM has a nearly impossible job of reacting to change. It is even difficult for IBM to recognize change. ... IBM has immense capital, plant and people resources but these resources appear to be almost too large to be manageable in the short term and places IBM in a difficult position to react to important market changes.

IBM has lost its flexibility at a time when that is what the market demands ... I feel these problems are probably irreversible but must be addressed for the longer term if IBM is to continue to be the leader in the world information handling market.

Exhibit 7A John F. Akers Representative Calendar—Fall 1990**Monday**

8:30–9:30 Strategic Planning Conference update
 10:00–10:30 Review plans for T.J. Watson Jr. Annual Design Award
 11:00–12:00 IBM Management and Measurement Systems
 1:00–1:15 Review Education speech
 1:30–2:00 Quality Update
 4:00–4:45 Preparation for Board meeting
 5:25 Depart for New York City
 6:30–9:30 Dinner meeting—outside Board of Directors
 Overnight NYC

Tuesday

8:00–9:00 Breakfast meeting
 9:30 Depart for Washington
 11:00–11:45 National Alliance of Business—Education meeting
 12:00–2:00 The Business Roundtable—Education Task Force
 2:00–8:30 The Business Roundtable—Board meeting
 Overnight Washington

Wednesday

8:15–11:45 United Way Executive Committee
 12:15–1:30 Travel Washington/Armonk
 2:00–5:00 Management Committee meetings
 6:00 Depart for East Fishkill
 Overnight East Fishkill

Thursday^a

3:30–5:00 East Fishkill plant celebration—3rd shift
 5:30–9:15 Poughkeepsie plant/lab celebration—3rd and 1st shifts
 9:35–10:30 Myers Corners lab celebration
 11:00–11:50 East Fishkill plant celebration—1st shift
 12:00 Depart for Armonk
 2:00–4:15 Management Committee meetings

Friday

8:15–8:30 Board meeting agenda
 8:30–9:00 3rd quarter outlook
 9:00–12:00 Management Committee meetings
 1:15–5:00 IBM-U.S. review

^aIt was the first customer shipment of the ES/9000 mainframe computer

Exhibit 7B IBM's Management Committee Agenda, First Six Months 1990

Subject	Hours in 1990					
	Jan.	Feb.	Mar.	Apr.	May	Jun.
Finance and planning	4.00	3.00	3.00	2.75	4.75	2.50
Geographic units						
Business reviews						
• IBM U.S.	6.00	0.50	0.50	6.50	0.50	0.50
• Europe, Mideast, Africa	0.00	2.00	0.50	0.00	1.25	0.50
• Asia-Pacific	0.00	2.00	0.50	1.00	0.25	0.50
Site reviews	6.50	3.50	4.00	12.50	10.50	10.50
Strategic issues	5.50	2.50	2.25	1.50	0.75	3.00
Technical product and marketing reviews	1.50	1.50	5.25	3.00	2.75	1.50
Human resources	0.00	1.00	2.75	3.25	0.00	0.50
Total hours/month	23.50	16.00	18.75	30.50	20.75	19.50



The Transformation of IBM (Supplement)

In January 1992, year-end company reports indicated that IBM had its worst year since the mid-1940s; revenues were down by almost \$5 billion and the stock was trading at nine-year lows. Moreover, the company's market share declined in all major geographic areas. Indications of the impending problems became clear to Akers early in the second quarter of 1991. In response, Akers vented his frustrations to a group of IBM mid-level managers. The comments, which soon became front-page news, stated bluntly that IBM faced a crisis situation. He criticized managers for being too comfortable about the firm's position and too lackadaisical to react quickly to IBM's deteriorating market position.

The fact that we are losing market share makes me goddam mad. I used to think that my job as a rep was at risk if I lost a sale. . . . I'm sick and tired of visiting plants to hear nothing but great things about quality and cycle time—and then to visit customers who tell me of problems. . . . Our people have to be competitive, and if they can't change fast enough, as fast as our industry . . . goodbye. (WSJ, May 29, 1991, pp. B1&B2)

Akers later addressed all IBM employees in the company's internally circulated *Think Magazine*—exhorting managers to feel a sense of urgency. For example, he commented,

I am convinced that some of our people do not understand that they have a deeply personal stake in the declining market share, revenue, and profits. A healthy level of concern and urgency, which I call tension, is essential for everyone at IBM.

Akers's Moves

Akers's actions did not stop with these criticisms. First, he moved to shake up some of the top management team, which had been fairly stable since the mid-1980s. The most notable departure was the head of IBM sales and marketing for the United States. Then, in December 1991, Akers presented a companywide reorganization plan to a group of top IBM executives from around the world. The plan was meant, in his own words, to seek a "fundamental redefinition of how IBM does business." Under the plan, IBM would soon become a federation of smaller, more responsive companies. Ultimately, the plan would shift control from IBM's powerful management committee to newly created, almost free-standing, corporate subsidiaries. The subsidiaries were expected to be more responsive to changing market conditions. The subsidiary managers would be measured against aggressive profit goals with executive compensation more directly tied to performance.

Research Associate Jeffrey Cohn and Professor David B. Yoffie prepared this supplement from public sources as the basis for class discussion.

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Akers stated that the proposed changes would afford the giant company greater flexibility; it would permit headquarters to identify strategic business units with the most potential for growth, invest accordingly, and let the units pursue with vigor their business opportunities. For example, the \$14 billion personal computer group would be permitted to set its own prices, and determine how the products would be developed and manufactured. IBM executives commented that revenues from all of its software divisions would be five times the size of Microsoft. Departing from IBM tradition, each division would be encouraged to compete directly against rival original equipment manufacturers.

Under the reorganization plan, IBM's marketing and service companies would remain the focal point for managing customer relationships. They would retain exclusive franchise rights for products with the IBM logo, and responsibility for setting resource levels, creating and managing alliances, and segmenting their markets based on customer size, industry, or products. IBM's country general managers would continue to be the principal executives within their geography. To varying degrees, country managers would be free to maximize sales through any distribution channel. Similarly, each one of IBM's manufacturing and development businesses would become responsible for worldwide manufacturing as well as product development. The newly autonomous product businesses would gain increased responsibility for managing capacity investments worldwide. Throughout the reorganization, IBM continued its downsizing: by the end of 1992, the company employed roughly 300,000 people, down more than 100,000 since Akers took over.

1992 Results

Despite the revamping of the corporation, IBM suffered its worst year in history in 1992, losing \$4.97 billion. In the fourth quarter alone, IBM reported the largest quarterly loss in American history (in excess of \$5 billion), and its first operating loss, ever. IBM continued to lose market share in all segments. Deteriorating financial performance led to a collapse in IBM's share price. Shareholders lost over \$75 billion in market value since 1987 when the stock traded as high as \$174. Shareholders lost \$25 billion in the last six months of 1992, as the share price dropped from over \$100 to the high \$40s.

On January 26, 1993, pressure from shareholders led John Akers to relinquish his position as CEO (while he retained the title of chairman). In addition, the President, Jack Kuehler, was made vice chairman, and the CFO, Frank Metz, retired early. The board cut IBM's dividend by two-thirds, and outside directors created a committee to search for a successor. After a two month search, the committee broke with tradition and hired an outsider to replace Akers. Lou Gerstner--Harvard MBA, former McKinsey consultant, former president of American Express, and at the time, Chairman and CEO of RJR Nabisco--accepted the job of Chairman and CEO of IBM. In his first 100 days, Gerstner hired a new CFO and a new director of human resources, both from the outside. He also signaled a very different leadership style from Akers. Among other actions, he told senior IBM executives not to use slides in their presentations and he warned of large scale workforce reductions. However, by the summer of 1993 it was still unclear how the new CEO could turn around the world's largest computer company.

Why Change Programs Don't Produce Change

by Michael Beer, Russell A. Eisenstat, and Bert Spector



Harvard Business Review

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Effective corporate renewal starts at the bottom, through informal efforts to solve business problems.

Why Change Programs Don't Produce Change

by Michael Beer, Russell A. Eisenstat, and Bert Spector

In the mid-1980s, the new CEO of a major international bank – call it U.S. Financial – announced a companywide change effort. Deregulation was posing serious competitive challenges – challenges to which the bank's traditional hierarchical organization was ill-suited to respond. The only solution was to change fundamentally how the company operated. And the place to begin was at the top.

The CEO held a retreat with his top 15 executives where they painstakingly reviewed the bank's purpose and culture. He published a mission statement and hired a new vice president for human resources from a company well-known for its excellence in managing people. And in a quick succession of moves, he established companywide programs to push change down through the organization: a new organizational structure, a performance appraisal system, a pay-for-performance compensation plan, training programs to turn managers into "change agents," and quarterly attitude surveys to chart the

progress of the change effort.

As much as these steps sound like a textbook case in organizational transformation, there was one big problem: two years after the CEO launched the change program, virtually nothing in the way of actual changes in organizational behavior had occurred. What had gone wrong?

The answer is "everything." Every one of the assumptions the CEO made – about who should lead the change effort, what needed changing, and how to go about doing it – was wrong.

U.S. Financial's story reflects a common problem. Faced with changing markets and increased competition, more and more companies are struggling to reestablish their dominance, regain market share, and in some cases, ensure their survival. Many have come to understand that the key to competitive success is to transform the way they function. They are reducing reliance on managerial authority, formal rules and procedures, and narrow divisions of work. And they are creating teams, sharing information, and delegating responsibility and accountability far down the hierarchy. In effect, companies are moving from the hierarchical and bureaucratic model of organization that has characterized corporations since World War II to what we call the task-driven organization where what has to be done governs who works with whom and who leads.

But while senior managers understand the necessity of change to cope with new competitive realities, they often misunderstand what it takes to bring it about. They tend to share two assumptions with the CEO of U.S. Financial: that promulgating companywide programs – mission statements, "corporate culture" programs, training courses, quality circles, and new pay-for-performance systems – will transform organizations, and that employee behavior is changed by altering a company's formal structure and systems.

In a four-year study of organizational change at six large corporations (see the insert, "Tracking Corporate Change"; the names are fictitious), we found that exactly the opposite is true: the greatest obstacle to revitalization is the idea that it comes about through companywide change programs, particularly when a corporate staff group such as hu-

Michael Beer and Russell A. Eisenstat are, respectively, professor and assistant professor of organizational behavior and human resource management at the Harvard Business School. Bert Spector is associate professor of organizational behavior and human resource management at Northeastern University's College of Business Administration. Their book, The Critical Path to Corporate Renewal, was recently published by the Harvard Business School Press.

man resources sponsors them. We call this "the fallacy of programmatic change." Just as important, formal organization structure and systems cannot lead a corporate renewal process.

While in some companies, wave after wave of programs rolled across the landscape with little positive impact, in others, more successful trans-

Successful change efforts focus on the work itself, not on abstractions like "participation" or "culture."

formations did take place. They usually started at the periphery of the corporation in a few plants and divisions far from corporate headquarters. And they were led by the general managers of those units, not by the CEO or corporate staff people.

The general managers did not focus on formal structures and systems; they created ad hoc organizational arrangements to solve concrete business problems. By aligning employee roles, responsibilities, and relationships to address the organization's most important competitive task – a process we call "task alignment" – they focused energy for change on the work itself, not on abstractions such as "participation" or "culture." Unlike the CEO at U.S. Financial, they didn't employ massive training programs or rely on speeches and mission statements. Instead, we saw that general managers carefully developed the change process through a sequence of six basic managerial interventions.

Once general managers understand the logic of this sequence, they don't have to wait for senior management to start a process of organizational revitalization. There is a lot they can do even without support from the top. Of course, having a CEO or other senior managers who are committed to change does make a difference – and when it comes to changing an entire organization, such support is essential. But top management's role in the change process is very different from that which the CEO played at U.S. Financial.

Grass-roots change presents senior managers with a paradox: directing a "nondirective" change process. The most effective senior managers in our study recognized their limited power to mandate corporate renewal from the top. Instead, they defined their roles as creating a climate for change, then spreading the lessons of both successes and

failures. Put another way, they specified the general direction in which the company should move without insisting on specific solutions.

In the early phases of a companywide change process, any senior manager can play this role. Once grass-roots change reaches a critical mass, however, the CEO has to be ready to transform his or her own work unit as well – the top team composed of key business heads and corporate staff heads. At this point, the company's structure and systems must be put into alignment with the new management practices that have developed at the periphery. Otherwise, the tension between dynamic units and static top management will cause the change process to break down.

We believe that an approach to change based on task alignment, starting at the periphery and moving steadily toward the corporate core, is the most effective way to achieve enduring organizational change. This is not to say that change can never start at the top, but it is uncommon and too risky as a deliberate strategy. Change is about learning. It is a rare CEO who knows in advance the fine-grained details of organizational change that the many diverse units of a large corporation demand. Moreover, most of today's senior executives developed in an era in which top-down hierarchy was the primary means for organizing and managing. They must learn from innovative approaches coming from younger unit managers closer to the action.

The Fallacy of Programmatic Change

Most change programs don't work because they are guided by a theory of change that is fundamentally flawed. The common belief is that the place to begin is with the knowledge and attitudes of individuals. Changes in attitudes, the theory goes, lead to changes in individual behavior. And changes in individual behavior, repeated by many people, will result in organizational change. According to this model, change is like a conversion experience. Once people "get religion," changes in their behavior will surely follow.

This theory gets the change process exactly backward. In fact, individual behavior is powerfully shaped by the organizational roles that people play. The most effective way to change behavior, therefore, is to put people into a new organizational context, which imposes new roles, responsibilities, and relationships on them. This creates a situation that, in a sense, "forces" new attitudes and behaviors on

Tracking Corporate Change

Which strategies for corporate change work, and which do not? We sought the answers in a comprehensive study of 12 large companies where top management was attempting to revitalize the corporation. Based on preliminary research, we identified 6 for in-depth analysis: 5 manufacturing companies and 1 large international bank. All had revenues between \$4 billion and \$10 billion. We studied 26 plants and divisions in these 6 companies and conducted hundreds of interviews with human resource managers; line managers engaged in change efforts at plants, branches, or business units; workers and union leaders; and, finally, top management.

Based on this material, we ranked the 6 companies according to the success with which they had managed the revitalization effort. Were there significant improvements in interfunctional coordination, decision making, work organizations, and concern for people? Research has shown that in the long term, the quality of these 4 factors will influence performance. We did not define success in terms of improved financial performance because, in the short run, corporate financial performance is influenced by many situational factors unrelated to the change process.

To corroborate our rankings of the companies, we also administered a standardized questionnaire in each company to understand how employers viewed

the unfolding change process. Respondents rated their companies on a scale of 1 to 5. A score of 3 meant that no change had taken place; a score below 3 meant that, in the employee's judgment, the organization had actually gotten worse. As the table suggests, with one exception – the company we call Livingston Electron-

Researchers and Employees—Similar Conclusions

Company	Ranked by Researchers	Extent of Revitalization	
		Rated by Employees	Standard Deviation
		Average	
General Products	1	4.04	.35
Fairweather	2	3.58	.45
Livingston Electronics	3	3.61	.76
Scranton Steel	4	3.30	.65
Continental Glass	5	2.96	.83
U.S. Financial	6	2.78	1.07

ics – employees' perceptions of how much their companies had changed were identical to ours. And Livingston's relatively high standard of deviation (which measures the degree of consensus among employees about the outcome of the change effort) indicates that within the company there was considerable disagreement as to just how successful revitalization had been.

people. (See the table, "Contrasting Assumptions About Change.")

One way to think about this challenge is in terms of three interrelated factors required for corporate revitalization. *Coordination* or teamwork is especially important if an organization is to discover and act on cost, quality, and product development opportunities. The production and sale of innovative, high-quality, low-cost products (or services) depend on close coordination among marketing, product design, and manufacturing departments, as well as between labor and management. High levels of *commitment* are essential for the effort, initiative,

and cooperation that coordinated action demands. New *competencies* such as knowledge of the business as a whole, analytical skills, and interpersonal skills are necessary if people are to identify and solve problems as a team. If any of these elements are missing, the change process will break down.

The problem with most companywide change programs is that they address only one or, at best, two of these factors. Just because a company issues a philosophy statement about teamwork doesn't mean its employees necessarily know what teams to form or how to function within them to improve coordination. A corporate reorganization may

change the boxes on a formal organization chart but not provide the necessary attitudes and skills to make the new structure work. A pay-for-performance system may force managers to differentiate better performers from poorer ones, but it doesn't help them internalize new standards by which to judge subordinates' performances. Nor does it teach them how to deal effectively with performance problems. Such programs cannot provide the cultural context (role models from whom to learn) that people need to develop new competencies, so ultimately they fail to create organizational change.

Similarly, training programs may target competence, but rarely do they change a company's patterns of coordination. Indeed, the excitement engendered in a good corporate training program frequently leads to increased frustration when employees get back on the job only to see their new skills go unused in an organization in which nothing else has changed. People end up seeing training as a waste of time, which undermines whatever commitment to change a program may have roused in the first place.

When one program doesn't work, senior managers, like the CEO at U.S. Financial, often try another, instituting a rapid progression of programs. But this only exacerbates the problem. Because they are designed to cover everyone and everything, programs end up covering nobody and nothing particularly well. They are so general and standardized that they don't speak to the day-to-day realities of particular units. Buzzwords like "quality," "participation," "excellence," "empowerment," and "leadership" become a substitute for a detailed understanding of the business.

And all these change programs also undermine the credibility of the change effort. Even when managers accept the potential value of a particular program for others – quality circles, for example, to solve a manufacturing problem – they may be confronted with another, more pressing business problem such as new product development. One-size-fits-all change programs take energy away from efforts to solve key business problems – which explains why so many general managers don't support programs, even when they acknowledge that their underlying principles may be useful.

This is not to state that training, changes in pay systems or organizational structure, or a new corporate philosophy are always inappropriate. All can play valuable roles in supporting an integrated change effort. The problems come when such programs are used in isolation as a kind of "magic bullet" to spread organizational change rapidly through the entire corporation. At their best, change pro-

Contrasting Assumptions About Change

<i>Programmatic Change</i>	<i>Task Alignment</i>
Problems in behavior are a function of individual knowledge, attitudes and beliefs.	Individual knowledge, attitudes and beliefs are shaped by recurring patterns of behavioral interactions.
The primary target of renewal should be the content of attitudes and ideas; actual behavior should be secondary.	The primary target of renewal should be behavior; attitudes and ideas should be secondary.
Behavior can be isolated and changed individually.	Problems in behavior come from a circular pattern, but the effects of the organizational system on the individual are greater than those of the individual on the system.
The target for renewal should be at the individual level.	The target for renewal should be at the level of roles, responsibilities, and relationships.

grams of this sort are irrelevant. At their worst, they actually inhibit change. By promoting skepticism and cynicism, programmatic change can inoculate companies against the real thing.

Six Steps to Effective Change

Companies avoid the shortcomings of programmatic change by concentrating on "task alignment" – reorganizing employee roles, responsibilities, and relationships to solve specific business problems. Task alignment is easiest in small units – a plant, department, or business unit – where goals and tasks are clearly defined. Thus the chief problem for corporate change is how to promote task-aligned change across many diverse units.

We saw that general managers at the business unit or plant level can achieve task alignment through a sequence of six overlapping but distinctive steps, which we call the *critical path*. This path develops a self-reinforcing cycle of commitment, coordination, and competence. The sequence of steps is important because activities appropriate at one time are often counterproductive if started too early. Timing is everything in the management of change.

1. *Mobilize commitment to change through joint diagnosis of business problems.* As the term task alignment suggests, the starting point of any effective change effort is a clearly defined business prob-

lem. By helping people develop a shared diagnosis of what is wrong in an organization and what can and must be improved, a general manager mobilizes the initial commitment that is necessary to begin the change process.

Consider the case of a division we call Navigation Devices, a business unit of about 600 people set up by a large corporation to commercialize a product originally designed for the military market. When the new general manager took over, the division had been in operation for several years without ever making a profit. It had never been able to design and produce a high-quality, cost-competitive product. This was due largely to an organization in which decisions were made at the top, without proper involvement of or coordination with other functions.

The first step the new general manager took was to initiate a broad review of the business. Where the previous general manager had set strategy with the unit's marketing director alone, the new general manager included his entire management team. He

The starting point of any effective change effort is a clearly defined business problem.

also brought in outside consultants to help him and his managers function more effectively as a group.

Next, he formed a 20-person task force representing all the stakeholders in the organization – managers, engineers, production workers, and union officials. The group visited a number of successful manufacturing organizations in an attempt to identify what Navigation Devices might do to organize more effectively. One high-performance manufacturing plant in the task force's own company made a particularly strong impression. Not only did it highlight the problems at Navigation Devices but it also offered an alternative organizational model, based on teams, that captured the group's imagination. Seeing a different way of working helped strengthen the group's commitment to change.

The Navigation Devices task force didn't learn new facts from this process of joint diagnosis; everyone already knew the unit was losing money. But the group came to see clearly the organizational roots of the unit's inability to compete and, even more important, came to share a common understanding of the problem. The group also identified a

potential organizational solution: to redesign the way it worked, using ad hoc teams to integrate the organization around the competitive task.

2. *Develop a shared vision of how to organize and manage for competitiveness.* Once a core group of people is committed to a particular analysis of the problem, the general manager can lead employees toward a task-aligned vision of the organization that defines new roles and responsibilities. These new arrangements will coordinate the flow of information and work across interdependent functions at all levels of the organization. But since they do not change formal structures and systems like titles or compensation, they encounter less resistance.

At Navigation Devices, the 20-person task force became the vehicle for this second stage. The group came up with a model of the organization in which cross-functional teams would accomplish all work, particularly new product development. A business-management team composed of the general manager and his staff would set the unit's strategic direction and review the work of lower

level teams. Business-area teams would develop plans for specific markets. Product-development teams would manage new products from initial design to production. Production-process teams composed of engineers and production workers would identify and solve quality and cost problems in the plant. Finally, engineering-process teams would examine engineering methods and equipment. The teams got to the root of the unit's problems – functional and hierarchical barriers to sharing information and solving problems.

To create a consensus around the new vision, the general manager commissioned a still larger task force of about 90 employees from different levels and functions, including union and management, to refine the vision and obtain everyone's commitment to it. On a retreat away from the workplace, the group further refined the new organizational model and drafted a values statement, which it presented later to the entire Navigation Devices work force. The vision and the values statement made sense to Navigation Devices employees in a way many corporate mission statements never do – because it grew out of the organization's own analysis of real business problems. And it was built on a model for solving those problems that key stakeholders believed would work.

3. *Foster consensus for the new vision, competence to enact it, and cohesion to move it along.* Simply letting employees help develop a new vision

is not enough to overcome resistance to change – or to foster the skills needed to make the new organization work. Not everyone can help in the design, and even those who do participate often do not fully appreciate what renewal will require until the new organization is actually in place. This is when strong leadership from the general manager is crucial. Commitment to change is always uneven. Some managers are enthusiastic; others are neutral or even antagonistic. At Navigation Devices, the general manager used what his subordinates termed the “velvet glove.” He made it clear that the division was going to encourage employee involvement and the team approach. To managers who wanted to help him, he offered support. To those who did not, he offered outplacement and counseling.

Once an organization has defined new roles and responsibilities, people need to develop the competencies to make the new setup work. Actually, the very existence of the teams with their new goals and accountabilities will force learning. The changes in roles, responsibilities, and relationships foster new skills and attitudes. Changed patterns of coordination will also increase employee participation, collaboration, and information sharing.

But management also has to provide the right supports. At Navigation Devices, six resource people – three from the unit’s human resource department and three from corporate headquarters – worked on the change project. Each team was assigned one internal consultant, who attended every meeting, to help people be effective team members. Once employees could see exactly what kinds of

valuable specialized skills. Replacing them early in the change process, before they have worked in the new organization, is not only unfair to individuals; it can be demoralizing to the entire organization and can disrupt the change process. People’s understanding of what kind of manager and worker the new organization demands grows slowly and only from the experience of seeing some individuals succeed and others fail.

Once employees have bought into a vision of what’s necessary and have some understanding of what the new organization requires, they can accept the necessity of replacing or moving people who don’t make the transition to the new way of working. Sometimes people are transferred to other parts of the company where technical expertise rather than the new competencies is the main requirement. When no alternatives exist, sometimes they leave the company through early retirement programs, for example. The act of replacing people can actually reinforce the organization’s commitment to change by visibly demonstrating the general manager’s commitment to the new way.

Some of the managers replaced at Navigation Devices were high up in the organization – for example, the vice president of operations, who oversaw the engineering and manufacturing departments. The new head of manufacturing was far more committed to change and skilled in leading a critical path change process. The result was speedier change throughout the manufacturing function.

4. *Spread revitalization to all departments without pushing it from the top.* With the new ad hoc organization for the unit in place, it is time to turn to the functional and staff departments that must interact with it. Members of teams cannot be effective unless the department from which they come is organized and managed in a way that supports their roles as full-fledged participants in team decisions. What this often

means is that these departments will have to rethink their roles and authority in the organization.

At Navigation Devices, this process was seen most clearly in the engineering department. Production department managers were the most enthusiastic about the change effort; engineering managers were more hesitant. Engineering had always been king at Navigation Devices; engineers designed products to the military’s specifications without much concern about whether manufacturing could easily build them or not. Once the new team structure was in place, however, engineers had to participate on product-development teams

Teamwork asks more of employees – so they need more support from management.

new skills they needed, they asked for formal training programs to develop those skills further. Since these courses grew directly out of the employees’ own experiences, they were far more focused and useful than traditional training programs.

Some people, of course, just cannot or will not change, despite all the direction and support in the world. Step three is the appropriate time to replace those managers who cannot function in the new organization – after they have had a chance to prove themselves. Such decisions are rarely easy, and sometimes those people who have difficulty working in a participatory organization have extremely

with production workers. This required them to re-examine their roles and rethink their approaches to organizing and managing their own department.

The impulse of many general managers faced with such a situation would be to force the issue – to announce, for example, that now all parts of the organization must manage by teams. The temptation to force newfound insights on the rest of the organization can be great, particularly when rapid change is needed, but it would be the same mistake that senior managers make when they try to push programmatic change throughout a company. It short-circuits the change process.

It's better to let each department "reinvent the wheel" – that is, to find its own way to the new organization. At Navigation Devices, each department was allowed to take the general concepts of coordination and teamwork and apply them to its particular situation. Engineering spent nearly a year agonizing over how to implement the team concept. The department conducted two surveys, held off-site meetings, and proposed, rejected, then accepted a matrix management structure before it finally got on board. Engineering's decision to move to matrix management was not surprising, but because it was its own choice, people committed themselves to learning the necessary new skills and attitudes.

The temptation to force newfound insights on the rest of the organization is great, but it only short-circuits change.

5. *Institutionalize revitalization through formal policies, systems, and structures.* There comes a point where general managers have to consider how to institutionalize change so that the process continues even after they've moved on to other responsibilities. Step five is the time: the new approach has become entrenched, the right people are in place, and the team organization is up and running. Enacting changes in structures and systems any earlier tends to backfire. Take information systems. Creating a team structure means new information requirements. Why not have the MIS department create new systems that cut across traditional functional and departmental lines early in the change process? The problem is that without a well-developed understanding of information requirements, which can best be obtained by placing people on

task-aligned teams, managers are likely to resist new systems as an imposition by the MIS department. Newly formed teams can often pull together enough information to get their work done without fancy new systems. It's better to hold off until everyone understands what the team's information needs are.

What's true for information systems is even more true for other formal structures and systems. Any formal system is going to have some disadvantages; none is perfect. These imperfections can be minimized, however, once people have worked in an ad hoc team structure and learned what interdependencies are necessary. Then employees will commit to them too.

Again, Navigation Devices is a good example. The revitalization of the unit was highly successful. Employees changed how they saw their roles and responsibilities and became convinced that change could actually make a difference. As a result, there were dramatic improvements in value added per employee, scrap reduction, quality, customer service, gross inventory per employee, and profits. And all this happened with almost no formal changes in reporting relationships, information systems, evaluation procedures, compensation, or control systems.

When the opportunity arose, the general manager eventually did make some changes in the formal organization. For example, when he moved the vice president of operations out of the organization, he eliminated the position altogether. Engineering and manufacturing reported directly to him from that point on. For the most part, however, the changes in performance at Navigation Devices were sustained by the general manager's expectations and the new norms for behavior.

6. *Monitor and adjust strategies in response to problems in the revitalization process.* The purpose of change is to create an asset that did not exist before – a learning organization capable of adapting to a changing competitive environment. The organization has to know how to continually monitor its behavior – in effect, to learn how to learn.

Some might say that this is the general manager's responsibility. But monitoring the change process needs to be shared, just as analyzing the organization's key business problem does.

At Navigation Devices, the general manager introduced several mechanisms to allow key constituents to help monitor the revitalization. An oversight team – composed of some crucial man-

agers, a union leader, a secretary, an engineer, and an analyst from finance – kept continual watch over the process. Regular employee attitude surveys monitored behavior patterns. Planning teams were formed and reformed in response to new challenges. All these mechanisms created a long-term capacity for continual adaptation and learning.

The six-step process provides a way to elicit renewal without imposing it. When stakeholders become committed to a vision, they are willing to accept a new pattern of management – here the ad hoc team structure – that demands changes in their behavior. And as the employees discover that the new approach is more effective (which will happen only if the vision aligns with the core task), they have to grapple with personal and organizational changes they might otherwise resist. Finally, as improved coordination helps solve relevant problems, it will reinforce team behavior and produce a desire to learn new skills. This learning enhances effectiveness even further and results in an even stronger commitment to change. This mutually reinforcing cycle of improvements in commitment, coordination, and competence creates a growing sense of efficacy. It can continue as long as the ad hoc team structure is allowed to expand its role in running the business.

The Role of Top Management

To change an entire corporation, the change process we have described must be applied over and over again in many plants, branches, departments, and divisions. Orchestrating this companywide change process is the first responsibility of senior management. Doing so successfully requires a delicate balance. Without explicit efforts by top management to promote conditions for change in individual units, only a few plants or divisions will attempt change, and those that do will remain isolated. The best senior manager leaders we studied held their subordinates responsible for starting a change process without specifying a particular approach.

Create a market for change. The most effective approach is to set demanding standards for all operations and then hold managers accountable to them. At our best-practice company, which we call General Products, senior managers developed ambitious product and operating standards. General managers unable to meet these product standards by a certain date had to scrap their products and take a sharp hit to their bottom lines. As long as managers understand that high standards are not arbitrary but are dictated by competitive forces,

standards can generate enormous pressure for better performance, a key ingredient in mobilizing energy for change.

But merely increasing demands is not enough. Under pressure, most managers will seek to improve business performance by doing more of what they have always done – overmanage – rather than alter the fundamental way they organize. So, while senior managers increase demands, they should also hold managers accountable for fundamental changes in the way they use human resources.

For example, when plant managers at General Products complained about the impossibility of meeting new business standards, senior managers pointed them to the corporate organization-development department within human resources and emphasized that the plant managers would be held accountable for moving revitalization along. Thus top management had created a demand system for help with the new way of managing, and the human resource staff could support change without appearing to push a program.

Use successfully revitalized units as organizational models for the entire company. Another important strategy is to focus the company's attention on plants and divisions that have already begun experimenting with management innovations. These units become developmental laboratories for further innovation.

There are two ground rules for identifying such models. First, innovative units need support. They need the best managers to lead them, and they need adequate resources – for instance, skilled human resource people and external consultants. In the most successful companies that we studied, senior managers saw it as their responsibility to make resources available to leading-edge units. They did not leave it to the human resource function.

Second, because resources are always limited and the costs of failure high, it is crucial to identify those units with the likeliest chance of success. Successful management innovations can appear to be failures when the bottom line is devastated by environmental factors beyond the unit's control. The best models are in healthy markets.

Obviously, organizational models can serve as catalysts for change only if others are aware of their existence and are encouraged to learn from them. Many of our worst-practice companies had plants and divisions that were making substantial changes. The problem was, nobody knew about them. Corporate management had never bothered to highlight them as examples to follow. In the leading companies, visits, conferences, and educational programs facilitated learning from model units.

Develop career paths that encourage leadership development. Without strong leaders, units cannot make the necessary organizational changes, yet the scarcest resource available for revitalizing corporations is leadership. Corporate renewal depends as much on developing effective change leaders as it does on developing effective organizations. The personal learning associated with leadership development – or the realization by higher management that a manager does not have this capacity – cannot occur in the classroom. It only happens in an organization where the teamwork, high commitment, and new competencies we have discussed are already the norm.

The only way to develop the kind of leaders a changing organization needs is to make leadership an important criterion for promotion, and then manage people's careers to develop it. At our best-practice companies, managers were moved from job to job and from organization to organization based on their learning needs, not on their position in the hierarchy. Successful leaders were assigned to units that had been targeted for change. People who needed to sharpen their leadership skills were moved into the company's model units where those skills would be demanded and therefore learned. In effect, top management used leading-edge units as hot-houses to develop revitalization leaders.

But what about the top management team itself? How important is it for the CEO and his or her direct reports to practice what they preach? It is not surprising – indeed, it's predictable – that in the early years of a corporate change effort, top managers' actions are often not consistent with their words. Such inconsistencies don't pose a major barrier to corporate change in the beginning, though consistency is obviously desirable. Senior managers can create a climate for grass-roots change without paying much attention to how they themselves operate and manage. And unit managers will tolerate this inconsistency so long as they can freely make changes in their own units in order to compete more effectively.

There comes a point, however, when addressing the inconsistencies becomes crucial. As the change process spreads, general managers in the ever-growing circle of revitalized units eventually demand changes from corporate staff groups and top management. As they discover how to manage differ-

ently in their own units, they bump up against constraints of policies and practices that corporate staff and top management have created. They also begin to see opportunities for better coordination between themselves and other parts of the company over which they have little control. At this point, corporate organization must be aligned with corporate strategy, and coordination between related but hitherto independent businesses improved for the benefit of the whole corporation.

None of the companies we studied had reached this "moment of truth." Even when corporate leaders intellectually understood the direction of change, they were just beginning to struggle with how they would change themselves and the company as a whole for a total corporate revitalization.

This last step in the process of corporate renewal is probably the most important. If the CEO and his or her management team do not ultimately apply to themselves what they have been encouraging their general managers to do, then the whole process can break down. The time to tackle the tough challenge of transforming companywide systems and structures comes finally at the end of the corporate change process.

At this point, senior managers must make an effort to adopt the team behavior, attitudes, and skills that they have demanded of others in earlier phases of change. Their struggle with behavior change will help sustain corporate renewal in three ways. It will promote the attitudes and behavior needed to coordinate diverse activities in the company; it will lend credibility to top management's continued espousal of change; and it will help the CEO identify and develop a successor who is capable of learning the new behaviors. Only such a manager can lead a corporation that can renew itself continually as competitive forces change.

Companies need a particular mind-set for managing change: one that emphasizes process over specific content, recognizes organization change as a unit-by-unit learning process rather than a series of programs, and acknowledges the payoffs that result from persistence over a long period of time as opposed to quick fixes. This mind-set is difficult to maintain in an environment that presses for quarterly earnings, but we believe it is the only approach that will bring about successful renewal. 

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Bob Galvin and Motorola, Inc. (A)

On April 24, 1983, the biennial meeting of Motorola, Inc.'s top 153 officers was drawing to a close, and Bob Galvin, chairman and chief executive officer of the \$4 billion company, was about to offer his concluding comments. The theme of the two-day session had been "Managing Change," an appropriate topic, since the 55-year-old producer of electronics equipment had experienced a year of 15% growth—or half a billion dollars between 1982 and 1983. Galvin knew that the message he had in mind was surprising in light of the company's apparent success.

Increasingly as he "walked the halls" of the corporation, Galvin had heard more and more complaints. Managers were upset by longer product development cycles, by too many layers in the management structure, and by ponderous, inflexible decision approval processes. Galvin interpreted these frequently heard complaints in the context of a rapidly changing competitive environment. He recognized the growing threat from Japanese manufacturers to key Motorola products, such as cellular telephones and semiconductors. And much to the annoyance of his senior managers, he often asserted "we haven't even begun to compete internationally yet."

Galvin believed that the firm's current inability to respond quickly and flexibly to the changing needs of the customer could prove fatal in the coming global competitive crisis. Still, he kept asking himself if he, as chief executive officer, could make the kinds of changes Motorola needed. If he did nothing else in his last years before retirement, he wanted to reposition Motorola on the path toward renewed competitiveness. He knew this would be all the more difficult because many of his managers did not recognize the problems he saw. As he approached the speaker's podium, Galvin reflected that "I suppose I've been preparing for this speech for the last 45 years."

Motorola, Inc.

Galvin Manufacturing Company was founded by Paul V. Galvin, Bob Galvin's father, in 1928. The Chicago-based firm's earliest products were alternating electrical current converters and automobile radios. Paul Galvin dubbed the car radio he developed the "Motorola"—from motor and victrola—and in 1947, this became the company's name as well.

From their firm's modest beginning with less than \$1,500 in working capital and equipment, Paul Galvin and his brother, Joe, tried to create a humane and democratic work environment for their employees; everyone, from Paul Galvin himself to the newest production line employee, was addressed on a first-name basis; the Galvins had replaced the typical time clock in the plant with an employee honor system; and by 1947, Paul Galvin established a profit-sharing program for the 2,000 workers the firm then employed. As a result of such efforts, Motorola remained union free.

This case was prepared by Research Associate Mary Gentile, under the supervision of Associate Professor Todd D. Jick, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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Over the years, Motorola extended its product base to include home radios, phonographs, televisions, and transistors and semiconductor components. By 1983, however, under Bob Galvin's leadership, the firm had sold many of its consumer electronic businesses and developed other markets based on new technology. By then, the firm was composed of five geographically dispersed sectors or groups:

1. **The Semiconductor Products Sector**, with 1982 net sales of \$1.3 billion, produced such products as microprocessors, memory chips, and integrated circuits.
2. **The Communications Sector**, with 1982 net sales of \$1.5 billion, produced products such as: two-way radios, paging devices, and cellular telephones.
3. **The Information Systems Group (ISG)**, with 1982 net sales of \$485 million, produced an integrated line of data transmission and distributed data processing systems.
4. & 5. **The Automotive and Industrial Electronics Group (AIEG) and The Government Electronics Group (GEG)** had combined 1982 net sales of \$564 million. AIEG produced such products as fuel-injection systems, electronic engine controls and instrumentation, and electronic appliance controls. GEG conducted research in satellite communications technology.

This product-focused organizational structure grew out of Paul and Bob Galvin's emphasis on the customers' interests and their concern that a large, centralized organization might not be responsive enough to those interests. Over the years, Motorola had gradually decentralized. In the 1950s Paul Galvin formed divisions; in the early 1960s Bob Galvin established product lines with product managers who managed specific marketing and engineering areas, but who purchased the centralized manufacturing and sales functions. By the 1980s, the groups and sectors structure was in place, along with a multilayered matrix system of management. At the close of 1982 Motorola had approximately 75,000 employees, with operations in 15 foreign countries as well as the United States.

Bob Galvin

Bob Galvin joined the firm as a stock clerk in 1944, without completing his college degree. He worked in a variety of positions until 1948 when he became executive vice president. He became president in 1956, and chairman/chief executive officer in 1964.

Galvin was an equitable and accessible manager. His leadership style was rooted in humility and an abiding respect for his father's values. He often quoted Paul Galvin when explaining a decision he had made, and in assessing his own influence at Motorola, he pointed to the "privilege" of his long service with the firm, as well as to the "mantle" he had received from his father: "I am fortunate to carry some of his reputation, in addition to what I've earned myself." He was a serious and thoughtful man who defined his role as "leading the institution: I try to be a good listener, to look for the unattended, the void, the exception that my associates are too busy to see."

Over the years he had championed not only various reorganizational efforts and product/market shifts but a variety of participatory management, executive education, and strategic planning programs. For example, in the late 1960s, Motorola developed a technology innovation planning process—the Technology Roadmap—which involved the periodic projection of future technological developments and the subsequent planning and reviewing of the firm's progress against that projection.

In the 1970s, Motorola developed the Participative Management Program (PMP) as a means to enhance productivity and employee involvement in the firm. PMP divided employees into small groups that met to discuss problems and potential improvements in their area of responsibility. Each group sent one member to report its ideas to the group one level up, which thereby enhanced communication in all directions. PMP efforts were also tied to a bonus incentive program.

Galvin's style and the Motorola culture were clearly people oriented. High value was placed on senior service and in fact, no employee with more than ten years' service could be fired without approval from Galvin himself. John Mitchell, Motorola's president, commented: "Bob is the culture here."

Some Motorola managers, however, criticized Motorola's "low demand environment," a tone set by Galvin himself. He devoted significant attention to the development of a strong managerial succession at Motorola and consequently was quite confident in Motorola's senior managers—his "family," as he called them. He felt convinced that if he but pointed out a problem to his officers, they would certainly be motivated and capable of resolving it appropriately. From time to time he gave a speech on leadership as he perceived it (Exhibit 1), including the following excerpt:

Again we see the paradox of the leader—a finite person with an apparent infinite influence.

A leader is decisive, is called on to make many critical choices, and can thrive on the power and the attention of that decision-making role. Yet the leader of leaders moves progressively away from that role.

Yes, he or she can be decisive and command as required. Yet that leader's prime responsibility is not to decide or direct but to create and maintain an evocative situation, stimulating an atmosphere of objective participation, keeping the goal in sight, recognizing valid consensus, inviting unequivocal recommendation, and finally vesting increasingly in others the privilege to learn through their own decisions.

Galvin hoped to encourage this "privilege" through the variety of innovative programs that Motorola adopted.

Motorola in 1983

Galvin believed, in that spring of 1983, that Motorola was poised on the edge of a new competitive era. The company had just come through a recession in the semiconductor industry which had caused an 8% downturn in earnings between 1980 and 1982. Difficult as that period had been, however, Motorola's losses had been far less severe than those of competitors like Texas Instruments and Intel. "Motorola did see their profits slip by 6% during the worst year of the recession. But their arch-rivals, TI and Intel, experienced a 49% and 72% drop, respectively."¹ (See Exhibit 2.) And Galvin wanted to build on Motorola's strengths at a time when performance was beginning to look strong again. Although the first quarter was a bit slow, sales seemed to be on the upswing as Motorola faced the summer of 1983, and Galvin saw the national economy and his firm gearing up for rapid growth in the next few years. He recognized this growth as a blessing and a threat.

Increases in sales and earnings were welcome, of course, as was the accompanying confidence within the firm. However, rapid expansion brought new structural and managerial challenges and exacerbated existing deficiencies. In addition, confidence could engender a dangerous

¹ James O'Toole, "Second Annual NM Vanguard Award," *New Management*, 3, 2, Fall, 1985, p. 5

complacency that made change all the more difficult. And finally, Galvin was all too cognizant of the cyclical nature of the semiconductor and computer industries and the growing threat of Japanese competition in both the communications and the semiconductor sectors of the business.

Galvin was also looking internally. One of Galvin's favored management techniques was walking the halls of the organization, listening to the ideas and the complaints of Motorola's employees, especially the middle managers. Galvin believed these managers were in touch with "real world" implementation issues that higher level managers might miss because of their need to oversee so many different functions and systems. Galvin was a strong believer in open communications and he encouraged employees at all levels to sit down with him in the company cafeteria at lunch, or to catch him in the halls of the firm to share their ideas and their criticisms.

Structural Issues

The issues he heard about in spring 1983 were disturbingly consistent with concerns that had been building throughout the 1970s. Galvin identified them as "structural concerns." Employees complained of the problems engendered by the sheer size and complexity of Motorola's matrix organization. Objective and methodology conflicts routinely developed between Motorola's customer-oriented functional managers (in sales or distribution, for example) and their product line managers. Although traditionally Galvin had always stressed the importance of staying close to the customer and the customer's needs, the complexity of the firm's products often caused product line managers to be more technology-driven than market-driven in their planning and managing processes.

No single manager was clearly responsible for a particular project through all its cycles, from its origin in customer discussions through design, development, testing, production and into sales. Consequently, project deadlines set by engineers carried little weight with the production staff, and the needs of the sales and distribution managers were poorly integrated into the realities of the manufacturing area. Galvin was alarmed by the ever-lengthening product development cycles.

Motorola's lines of authority were as often dotted as solid and spans of control were narrow. As the company grew and its products multiplied (see Exhibit 3), management layers increased as well. One company study, completed in 1983, reported nine to twelve layers between first-line managers and the executive level, with an average span of control over five people or fewer. Thirty percent managed three or fewer people. Individuals were struggling to preserve their turf and budget and maintain internal performance standards. Long-term competitive strategy and customer needs were obscured by short-term incentives, and employees felt both overmanaged and underdirected.

Top management's efforts to energize the firm and to enhance creative cooperation translated into programs like the periodic technology review and PMP, with their step-by-step procedures and committee-based processes. Such programs involved employees at all levels and kept critical issues before them, but some managers worried that their format was too mechanistic and that they enabled employees to comply with the letter rather than the spirit of the programs.

Finally Motorola's chief executive office was structured as a triumvirate with Bob Galvin as chairman, William Weisz as vice chairman, and John Mitchell as president. Galvin defined their respective responsibilities as follows: "John Mitchell is running the business; Bill Weisz is managing the company; and my job is to lead the institution. And in a way, they are all the same thing." Mitchell elaborated: "Bill Weisz and I share the COO position. I handle the Communications Sector, the Automotive and Industrial Electronic Group, and Japan; Bill handles the Semiconductor Products Sector, the Information Systems Group, and the Government Electronics Group." Galvin saw the chief executive office as a model of democratic practice and open communications for the firm.

However, this tripartite structure was one of the other complaints that circulated among Motorola's managers. Mitchell explained: "They call us the three bears and they ask 'why can't you be single in voice, style, and direction'?"

Galvin reviewed the concerns he gathered from Motorola's managers; from his son, Chris, who worked in the Communications Sector; and from his own observations. Taken alone, he believed they were cause for concern. When he also considered the rapid growth Motorola appeared to face as the economy emerged from the last two years of recession, and the growing competitive threat from Japan, Galvin became convinced that it was time for action.

Japanese Competition

Motorola was one of the world's leading producers of two-way radios, cellular telephone systems, semiconductors, and microprocessor chips, and Japan was competing in and threatening each of these markets. The firm faced Japanese market practices such as "dumping" (selling product at less than "fair value" as a way to increase market share quickly) and "targeting" (the cooperative efforts of a group of Japanese firms, supported by Japanese law, to break into and capture a particular international market, such as computer memory chips). In response to these challenges, Galvin worked with federal foreign relations and trade committees, attempting to fight "unfair" trade practices and protectionism:

Testifying before the Senate Foreign Relations Committee last September [1982], he said U.S. policy on trade in high-technology products should make it clear that this country "will not accept a situation where foreign national industrial policies, based on nonmarket mechanisms and unreasonable trade practices, enable any country to disrupt U.S. markets, prevent reasonable access to its home markets or give unjustified advantage to its firms in pursuing Third World markets."²

Galvin also knew, however, that he had to make changes closer to home, within Motorola. His success in obtaining an order from Nippon Telegraph & Telephone Public Corporation for paging devices in early 1982 was a result both of pressure from the United States government and Motorola's efforts to produce 100% defect-free product. And even during the difficult recession years of 1981-1982, Motorola continued to invest in research and development, in order to position itself competitively for the market growth it believed would follow. Galvin thought that effective competition with the Japanese meant not only modifications in federal trade regulations but Motorola's investment in R&D, enhanced productivity, and quality control. And he believed the means to this end were through the company's employees. This was consistent with the kind of thinking behind PMP, ten years earlier.

As Galvin considered his company's current condition and challenges, he felt a great sense of personal urgency. He was 61 years old, nearing retirement, and he wanted to leave a strong and healthy company to his family of managers. And although he wasn't certain how to implement a process of "renewal" at Motorola, he was quite confident of the need. He remembered his father's advice to "just get in motion" when action was required, confident that he would find his way.

² Grover Herman, "Competing with the Japanese," *Nation's Business*, November 1982, p. 48.

Motorola Biennial Officers' Meeting: April 1983

Galvin came to the Officers' Meeting³ with his mind full of a recent trip to Japan. He had been impressed by the commitment of the industry employees he saw there and with the cutting-edge production technology the Japanese firms utilized. On the long plane ride back to the United States, Galvin had been reading the current management best seller, *In Search of Excellence*. Its authors, Peters and Waterman, advocated simpler organizational structures with direct ties to the consumer.

With all these observations, conclusions, and influences in his mind, Galvin felt an uncanny, undeniable immediacy in his senior officers' discussion of their efforts to manage change. Every time an individual complained of too many layers of command, Galvin winced, "There it is again." Each time an officer mentioned the absence of realistic and convincing deadlines that made sense across departments, Galvin sighed, "There it is again." He knew he needed no more evidence. He was sure of his message and of its significance.

As the meeting drew to a close, his staff expected Galvin's usual clear, concise concluding summary. Instead he stood up and issued a challenge. He called upon his senior managers to take a fresh look at their organizations and to consider structural changes—smaller, more focused business units. He wanted to decrease the many layers of management and to bring management closer to the product and the market. Galvin spoke with ease and conviction: "My message was spontaneous in tone and mood, but it had been building out of years of experience. I had been hearing this message from my middle managers and I'm a good listener."

In his speech, Galvin stressed Motorola's

... constant thrust for renewal. Renewal is the most driving word in this corporation for me, the continual search for ways to get things done better.

As I walk the halls, I keep my ears open and I keep picking up signals. A middle manager might tell me that he can't understand how the business did because we keep aggregating our results into one big number. Or another might tell me he thinks he has a good idea but he can't get the authority to get it done.

I see a welling up of the evidence of need and today I think the window is open. So I decided to express my concern and my conviction to you, confident that you share my insights and that together we will find our way to an organized effort of change. When we come together in two years, we will report and share the changes made and the lessons learned.

Galvin had not discussed this presentation with Weisz or Mitchell beforehand. Nor had he explicitly addressed with his Human Resources staff the issue of structural reorganization as the key method of a change at Motorola. He was confident that he knew his audience, his "constituency," and that they would welcome his challenge.

As Galvin concluded, however, and managers stood and began to move out of the room, the buzzing conversations were colored by surprise and confusion more than eagerness. Suddenly the firm's rising sales were a problem. Was this just another PMP pep talk? Was Galvin serious about restructuring the organization? Who would be responsible for this? Even Galvin's wife, Mary, turned to him later that evening and asked: "What exactly did you have in mind, Bob?"

³ Officers refer to both business officers and officers of the corporation (appointed and elected VPs). Elected officers are elected by the board of directors, and appointed officers must be approved by the chief executive officer.

That was Friday evening. On Monday morning, the calls started coming in to Galvin's office, to Joe Miraglia, corporate vice president and director of Human Resources, and passed back and forth between the various senior managers. Rumors were spreading: people wanted to know what had Galvin been reading, and with whom had he been talking? One senior manager jested that perhaps Galvin was miffed that Motorola had not been mentioned enough by the authors of *In Search of Excellence*. But everyone wanted to know: what did Galvin mean and was he serious?

Responses to Galvin's Challenge

The Chief Executive Office

Responses to Galvin's surprise speech varied according to each individual's position and the implications of this challenge for his or her responsibilities. William Weisz, vice chairman and John Mitchell, president, for example, did not expect the timing and form of Galvin's presentation. The message itself, however, felt familiar. It coincided with both a long-term trend in Motorola toward decentralization and with Galvin's constant concern for the customer's needs. Mitchell commented:

Bob Galvin's style is to make strong statements like "the implied solution to the problems of the matrix is to divide the company into small businesses." This took people aback. It sounded simplistic and it sounded like it would start right away.

Both Mitchell and Weisz could place Galvin's comments into a context, knowing and trusting the CEO as they did, and although they may not have chosen the timing and the particular solution Galvin proposed, they agreed with his diagnosis of Motorola's ills. As Galvin explained: "The vice chairman came on board with me on this issue in the spirit of faith and of insight. The president was preoccupied with running the business, but he came on as well."

Operating Officers

For many of the top sector and group officers at Motorola there was an initial hesitancy about Galvin's unexpected spontaneous challenge, according to Robert Schaffer, an external consultant who interviewed these officers. Although they recognized that Galvin was earnest, they asked themselves some questions before considering what their response would be and how serious an effort was involved. Was this another in a string of innovations that arose from the visionary Galvin? Was this a commitment by all three chief executive officers or something Galvin alone would pursue as a reflection of his frustration? Would the head of any unit take this as a commitment to action? Did Galvin already have answers or was he willing and ready to open up the issue for questions?

Many of the firm's top officers did not share Galvin's sense of urgency about Motorola's competitive position. The company had a tradition of market strength and of technological leadership. Employees felt secure there; the culture placed a premium on commitment and length of service. And in the spring of 1983, the outlook looked particularly good for semiconductor products. For despite the threat posed by Japanese competitors, the company had grown by half a billion dollars in the last year and it was still moving. One vice president in the Semiconductor Products Sector explained that Galvin's biggest problem in selling his change agenda was the "status quo: Managers here are scientists. They see themselves and the sector as renegades on the leading edge of technology, but when it comes to management and productivity measures, they stick with 'what worked before.'" Even in the Communications Sector where Japanese competition was posing a very serious threat to the pager business and to the just burgeoning cellular telephone business, much of the blame was placed on "unfair" Japanese trade practices.

Perhaps managerial resistance to Galvin's challenge was all the more prevalent because no one was quite sure what he was proposing. Was this a major and radical call to action or only a proposal for new executive training? Many believed it was the latter and thus, even those managers who shared Galvin's concern for Motorola's competitive position were doubtful that more educational programs would make a difference. If, on the other hand, Galvin was ordering a concrete structural change (an action that would be uncharacteristically directive), then he needed to be more precise. In the meantime, many managers simply waited for the thing to blow over.

Human Resources

In the ensuing days, while top management struggled to understand what Galvin had meant in his speech and what implications it had for them, Galvin himself met with Joe Miraglia, vice president of Human Resources at Motorola, whom he considered his "professional pivot point" within the organization; Galvin took the Human Resources function very seriously. The two promptly set about developing the vision the chief executive officer had introduced. Although Miraglia did not question Galvin's identification of problems in the organization, he commented:

Bob's idea was to create smaller business units more functionally integrated at lower levels. We in Human Resources disagreed; structure was not the sole answer. We didn't want this to be seen as just a structural solution imposed from above by "those who know better."

Miraglia believed Galvin's vision had to be developed and that his influence had to be focused more clearly.

Nevertheless, Miraglia and his staff within the sectors supported Galvin's basic assumptions. Phil Nienstedt, manager, Human Resources Programs for Semiconductor Products explained:

Business had been good in 1983, but it was something of a false prosperity as the company came off the leaner recession years. The company was growing with little control or discipline. Galvin was hitting some hot buttons in the Officers' Meeting when he said we needed to focus on the customer, to develop flexibility, smaller business entities, wider spans, less levels, fewer inefficiencies. The Human Resources staff had discussed these issues with Joe Miraglia before. But Bob Galvin was vague and unclear as to what he wanted to do about these things. I think he did this intentionally, to be provocative, to get people thinking and wondering. The problem with this kind of change, however, is that short-term objectives, like getting the work out the door, get in the way of addressing this kind of long-term problem.

Dick Wintermantel, director, Organization and Human Resources, in the Semiconductor Products Sector, pointed to another inhibitor to change:

It's difficult for managers to make changes at Motorola and many times this difficulty relates to core cultural values that served the company well on its way up the growth curve, but which may be dysfunctional now. For example, respect for senior service may run counter to competitive staffing needs. Once you have 10 years of service, you're treated with employment and job security. We are constrained to redeploy people even if there are strategic and competitive reasons to do so.

Always responding to the customer's request for new products can result in thousands of products and no coherent and efficient organization. A mentality of "we can do it ourselves" runs counter to the alliances necessary for penetrating offshore markets and resources. And, finally, a mistrust of "systems" and

"bureaucracy" can obstruct the development of necessary cost reduction systems or worldwide communications systems.

Although the HR team shared Galvin's sense of urgency and his belief in the necessity for change, they questioned both his structural focus and some aspects of the culture he had built. Miraglia explained: "Bob Galvin is confident that if his senior line managers agree with him, they will be able to assemble the infrastructure necessary to make change happen." The HR staff believed that neither managerial agreement nor an effective change process would be easy to come by

Exhibit 1 BOB GALVIN AND MOTOROLA, INC. (A) *Speech by Bob Galvin on Leadership*

I would like to share with you a special selective view of leadership. It finds its expression in a series of paradoxes.

We know so much about leadership, yet we know too little. We can define it in general, but find it hard to particularize. We recognize it when obvious, but it is not always obvious why. We practice leadership, which implies we are still preparing for the real thing.

It is neither necessary to impress on you an elaborate definition of leadership nor is this an appropriate time to characterize its many styles. Let it suffice that we acknowledge that no leader is worthy of the title absent creative and judgmental intelligence, courage, heart, spirit, integrity and vision applied to the accomplishment of a purposeful result through the efforts of followers and the leader. Rather, I elect to share with you some observations on a further series of paradoxes that reveal themselves as we analyze leadership.

When one is vested with the role of the leader, he inherits more freedom. The power of leadership endows him with rights to a greater range of self-determination of his own destiny. It is he who may determine the what or the how and the when or the where of important events.

Yet, as with all rights, there is a commensurate, balancing group of responsibilities that impose upon his freedom. The leader cannot avoid the act of determining the what or the who or the where. He cannot avoid being prepared to make these determinations. He cannot avoid being prepared to make these terminations. He cannot avoid seeing to their implementation. He cannot avoid living with the consequences of his decision on others and the demands these consequences impose on him. Only time will prove the merit of his stewardship. Because he is driven to pass this test of time, he will be obliged often to serve others more than himself. This obligation will more and more circumscribe his destiny. So those who assume true leadership will wonder from time to time if the apparent freedom of the leader adds a greater measure of independence, or whether the dependence of others on him restricts his own freedom.

For one to lead implies that others follow. But, is the leader a breed apart, or is he, rather, the better follower? Leadership casts the leader in many such roles:

- Observer—of the work his associates perform
- Sensor—of attitudes, feelings, and trends
- Listener—to ideas, suggestions, and complaints
- Student—of advisors, inside and out of his situation
- Product of experience—both his and others'
- Mimic—of other leaders who have earned his respect.

Is he not the better follower, as he learns more quickly and surely from the past, selects the correct advice and trends, chooses the simpler work patterns and combines the best of other leaders? Is it not good leadership to know when not to follow an aimless path?

The paradox again: To lead well presumes the ability to follow smartly.

Because a leader is human and fallible, his leadership is in one sense finite—constrained by mortality and human imperfections. In another sense, the leader's influence is almost limitless.

He can spread hope, lend courage, kindle confidence, impart knowledge, give heart, instill spirit, elevate standards, display vision, set direction, and call for action today and each tomorrow.

The frequency with which one can perform these leadership functions seems without measure. His effectiveness and personal resources, rather than attenuating with use, amplify as he reuses and extends his skills.

Like the tree whose shadow falls where the tree is not, the consequence of the leader's act radiates beyond his fondest perception.

Again, we see the paradox of the leader—a finite person with an apparent infinite influence.

A leader is decisive—is called on to make many critical choices, and can thrive on the power and attention of that decision-making role. Yet, the leader of leaders moves progressively away from that role.

Yes, he or she can be decisive and command as required. Yet that leader's prime responsibility is not to decide or direct, but to create and maintain an evocative situation, stimulating an atmosphere of objective participation, keeping the goal in sight, recognizing valid consensus, inviting unequivocal recommendation, and finally vesting increasingly in others the privilege to learn through their own decision.

A wiser man puts it thus:

We measure the effectiveness of the true leader, not in terms of the leadership he exercises, but in terms of the leadership he evokes; not in terms of his power over others but in terms of the power he releases in others; not in terms of the goals he sets and the directions he gives, but in terms of the plans of action others work out for themselves with his help; not in terms of decisions made, events completed and the inevitable success and growth that follow from such released energy, but in terms of growth in competence, sense of responsibility and in personal satisfactions among many participants.

Under this kind of leadership it may not always be clear at any given moment just who is leading. Nor is this important. What is important is that others are learning to lead well.

The complement to that paradox is that the growth that such leadership stimulates generates an ever-growing institution and an ever-increasing number of critical choices, more than enough of which fall squarely back on the shoulders of the leader who trained and willingly shared decision-making with others.

And there are others which, if not paradoxes, at least are incongruities. Have we not witnessed some who have claimed leadership yet never fully achieved it? Have we not observed others who have shunned leadership only to have it thrust upon them?

Each of us here is at once part leader and part follower as we play our roles in life. Fortunately, there is a spark of leadership quality in many men and women, and, most fortunately, the flame of future leadership burns brightly in many who matriculate here. It is this wellspring from which we will draw and which gives us confidence for the continued advance of society.

On this day, you may feel a sense of relief that you have borne your final test. Walter Lippman, for one, would not long have let you cherish this illusion. He once observed:

The final test of a leader is that he leaves behind in others the conviction and will to carry on.

This, for a few of the best of you here who would be leaders, may be the most personal paradox and crucial test of all.

Exhibit 2 Motorola Financial Information (1979-1982)

Four-Year Financial Summary

(Motorola, Inc. and consolidated subsidiaries, years ended December 31)

	1982	1981	1980	1979
Operating Results (in millions of dollars)				
Net sales	\$3,786	\$3,570	\$3,284	\$2,879
Manufacturing and other administrative costs of sales	2,269	2,066	1,895	1,672
Selling, general, and administrative expenses	1,013	985	877	756
Depreciation and amortization of plant and equipment	244	205	173	132
Interest expense, net	48	35	43	27
Special charge	—	—	13	10
Total costs and other expenses	3,574	3,311	3,002	2,597
Earnings before income taxes and extraordinary gain	212	259	282	282
Income taxes	42	77	90	111
Net earnings before extraordinary gain	170	182	192	171
Net earnings as a percent of sales	4.5%	5.1%	5.8%	5.9%
Extraordinary gain	8	—	—	—
Net earnings	\$ 178	\$ 182	\$ 192	\$ 171

Exhibit 2 (continued)

Sector Performance (1979-1982)

Information by Industry Segment and Geographic Region: Information about the Company's operations in different industry segments for the years ended December 31 is summarized below (in millions of dollars):

	Net Sales				Operating Profit			
	1979	1980	1981	1982	1979	1980	1981	1982
Semiconductor Products	\$ 992	\$1,222	\$1,278	\$1,298	\$170	\$186	\$131	
Communications Products	1,272	1,252	1,422	1,527	139	144	162	\$97
Information Systems	NA	279	358	485	NA	34	42	31
Products	7655	683	718	564	14	26	50	44
Other Products	(61)	(60)	(82)	(88)	(3)	2	(4)	(7)
Adjustments and Eliminations	\$2,713	\$3,098	\$3,335	\$3,786	\$259	\$274	\$251	307
Industry Totals								

Exhibit 3 Motorola Products**Semiconductor Products Sector**

Bubble memories
 Custom and semicustom semiconductors
 Fiber optic active components
 Field effect transistors
 Interface circuits
 Microcomputer board-level products
 Microcomputer systems
 Microprocessors
 Microwave devices
 MOS and bipolar analog ICs
 MOS and bipolar digital ICs
 MOS and bipolar memories
 MPU develop system hardware and software
 Operational amplifiers
 Optoelectronics components
 Power supply circuits
 Pressure and temperature sensors
 Rectifiers
 RF modules
 RF power and small signal transistors
 Telecommunication circuits
 Thyristors
 Triggers
 VLSI macrocell arrays
 Voltage regulator circuits
 Zener and tuning diodes

Communications Sectors

Base stations
 Car telephone systems
 Closed-circuit television systems
 Communications control centers
 Component products
 Digital voice-protection systems
 Electronic command and control systems
 Health care communications systems
 Information-display systems
 Microwave communications systems
 Mobile and portable FM two-way radio communications systems
 Portable data terminals
 Radio paging systems
 Signalling and remote control systems
 Test equipment

Information Systems Group

Communications processors
 Data network analyzers/emulators
 Digital service/channel service units
 Electronic data switches
 Intelligent terminals
 Leased-line modems
 Limited distance modems
 Local area networks

Information Systems Group (continued)

Modems
 Multifunction computer systems for distributed information processing and office automation appliances
 Multiplexers
 Network and management systems
 OEM modem cards
 Software for data entry, word processing, office management
 Switched network modems
 System processors
 Technical control facilities
 Video operator stations

Automotive and Industrial Electronics Group

Alternator charging systems
 Automotive and industrial digital instrumentation (tachometers, speedometers, odometers, hourmeters), and electronic instrument clusters
 Automotive and industrial digital monitoring systems
 Automotive and industrial sensors
 CRT display monitors, color and monochrome (5" to 23")
 Data and graphics terminals and subsystems
 Electronic appliance controls
 Electronic engine and powertrain controls
 Electronic engine governors
 Electronic fuel-handling systems
 Electronic ignition systems
 Electronic motor controls
 Electronic regulators
 Electronic transmission controls
 Engine management systems
 Telecommunications equipment
 Vehicle monitoring and recording systems
 Wireless systems and devices

Government Electronics Group

Countermeasures systems
 Drone command and control systems
 Electronic fuse systems
 Electronic positioning and tracking systems
 Fixed and satellite communications systems
 Intelligent display terminals and systems
 Missile and aircraft instrumentation
 Missile guidance systems
 Satellite survey and positioning systems
 Secure communications
 Surveillance radar systems
 Tracking and command transponder systems
 Video processing systems and products



Bob Galvin and Motorola, Inc. (B)

Commenting on the confusion and resistance that greeted Galvin's concluding speech at the 1983 Officers' Meeting, the chief executive officer said:

I felt a little by myself initially. Most of my associates wouldn't see this change as immediately crucial, but I was confident that most smart people would get on board eventually. I decided to write a memo to the company officers, in an effort to recover from my own earlier shallowness of expression and to sharpen the vision. The written word often has greater authority, and I hoped this document would do some selling and persuading.

In this memo of May 16, 1983, Galvin outlined the need for a "change in managing." Galvin identified the change objective:

. . .to assure that Motorola, for all of its businesses, will be optimally responsive to the market's need and as a function of that responsiveness assure our leadership. To accomplish this, we will focus on three of the four principal aspects of organization—the structure, the allocation of authority, and the process of managing. When one considers all three of these aspects of organization and matches them against our perceived needs, we come to this issue with a presumption that we must accomplish a result wherein more and more of our businesses within each division can operate more self-directed with greater autonomy so that the responses to market needs in each particular business can be surer, quicker, and more fulfilling of the needs of our customer.

He announced that this change would be implemented initially through the Organization and Management Development Review process which climaxed at an annual one-day meeting in Chicago with the top officers in each Motorola component and the three members of the chief executive office. Galvin then identified a variety of groups which he called "the resources" for the change process: all officers, Human Resource managers in each sector, an outside consultant to "test and mirror" what was being done, and all senior management. Galvin concluded his memo by explaining that specific actions or results of the process could not be spelled out, because they would be determined by the input and participation of the managers.

The May memo served to keep Galvin's concerns alive in the minds of his senior officers, but it failed to clarify what might happen next. The HR team continued to work with Galvin and decided that the first phase of the project would have to be data collection. Miraglia explained:

This case was prepared by Research Associate Mary Gentile, under the supervision of Associate Professor Todd D. Jick, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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We had so generalized the problem that our managers couldn't see what specific actions to take. We had to get them specific information. We decided to survey about 1,000 people worldwide at the product manager level and up, asking them what kinds of problems they faced in their efforts toward more effective and efficient operation. We collected this data and then fed it back to the company officers, to show them that there *was* a problem, and that this wasn't just in Galvin's head.

At the same time, an outside consultant, Robert Schaffer of R. H. Schaffer & Associates, was hired to collaborate with HR to help translate Galvin's idea into action. Schaffer interviewed the members of Motorola's Policy Committee, a group composed of Galvin, Weisz and Mitchell, the executive vice presidents, and the senior managers of the operating units—about a dozen in all who meet monthly to focus on key policy decisions for the corporation. Galvin had already arranged for his change initiative to be on the agenda of the Policy Committee several times and thus the Schaffer interviews, in November and December, provided an opportunity for candid individual responses to the subject.

Finally, phase one also included the initiation of a detailed guideline paper that would ultimately define the process, its objectives, and the roles of all the significant players. Following discussions with Galvin the first version was produced by the HR team and the consultant, and subsequent drafts were rewritten by Galvin, who incorporated comments from the Policy Committee members. By the end of 1983, this paper was still being written and the results of the research surveys were being compiled.



Bob Galvin and Motorola, Inc. (C)

The Organization Effectiveness Process

If the focus of phase one of the change process was information gathering, phase two focused on "Initial Implementation," or more specifically, communication of the 1983 research results, action planning, and pilot projects. In 1984, for example, the Galvin initiative received its name, the Organizational Effectiveness Process (OEP). Although a clear label facilitated communication and lent the project a certain tangibility and validity, many managers wondered if this new OEP would become simply another acronym in the "alphabet soup" of programs at Motorola.

In February of 1984, the Policy Committee heard the results of the HR team's survey of managers and of Schaffer's interviews with senior staff. The HR survey results were clearly consistent with Galvin's diagnosis of Motorola's management problems. Galvin was not at all surprised by this, for he had based much of his thinking on reports he had previously heard from middle managers throughout the corporation. For a CEO, he was remarkably well-connected to lower levels in the management structure. Schaffer's report on the Policy Committee interviews also showed considerable agreement with Galvin's diagnosis and concluded that: "While enthusiasm, commitment and perceptions are varied, there is enough consensus—and respect for Galvin's perspective—to get the change process going now."

Despite these research results, senior officers were, for the most part, still uncertain of what was being asked of them, especially since each one was pursuing improvements in their own areas to the best of their ability. Schaffer explained: "Everybody professed not to understand what Galvin was up to and reacted. . . as if they were merely observers or critics and not key players."

Schaffer's report to the Policy Committee also included recommendations for further actions and suggested "assignments" for the committee members to take back to their respective groups. For instance, each officer was asked to share the latest draft of the OEP guidelines paper with his teams, in an effort both to refine the document and to spread the concept. This paper went through numerous revisions in this way and, in all, was the subject of several Policy Committee meetings.

Policy Committee members were also asked to identify a few key areas, or "breakthrough" projects, where they could begin to apply the OEP thinking and concepts in their own work. Such an assignment was still somewhat vague for many officers. They had been working with the OEP guidelines, to be sure, but even in its so-called "finished" form (October 1984), this paper was still 16

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pages long and proceeded to raise questions (48 of them) rather than give directions. The Policy Committee guidelines focused to a large extent upon organizational structure, the assignment of managerial authority and accountability, and finally on management systems. But there was plenty of room for managers to "customize" projects to suit their particular needs. Galvin was determined not to offer a single "cookbook" solution to the varied problems of a complex organization. He wanted his managers to adopt the spirit rather than the letter of his program. This decision left OEP open to interpretations, however.

Policy Committee members were asked to identify key OEP projects in their own area of the business, to establish task forces and completion timetables, and to report back to the Policy Committee on their plans and their results. Some officers took this assignment as an opportunity for free rein to try some new and innovative management experiments. Some accelerated change efforts already in process, and some simply relabelled existing efforts to satisfy their assignments. These steps began in the spring of 1984.

Over the summer, reports were made to the Policy Committee meetings. The general managers of the different sectors would give presentations, assisted by their own HR team, that detailed the OEP efforts they were pursuing. Galvin was pleased with the reports, but Miraglia was not satisfied:

I believed Galvin was being offered a smokescreen by some of our businesses. I thought he was hearing what was already going on, without enough major breakthroughs in the OEP spirit. I checked with my Human Resources staff in the field on this and they agreed. The senior managers were *institutionalizing* OEP—creating organizational goals—rather than *internalizing* and really believing in it as a new way of looking at problems.

I discussed this with Bill Weisz, vice chairman and chief operating officer, and at the next meeting of the chief executive officers, with me present, he said: "Joe thinks the managers are not being completely accurate about the amount of energy being spent on this issue." A frank discussion followed out of which came the decision by Bob that he needed to use his influence more actively.

Subsequently Galvin set up a series of one-on-one meetings with the general managers. These were lengthy conversations. Galvin listened closely to each manager and tried to communicate how serious he was about OEP. He immediately wrote up detailed notes on each conversation and sent a copy to both the general manager and to Joe Miraglia.

By this time—the summer and fall of 1984—a general "Action Framework" and suggested "implementation steps" were given to Motorola officers (see *Exhibit 1*), and they all knew they were expected to report on their results in public review meetings before the close of the year.

The Semiconductor Sector

Gary Tooker, general manager of the Semiconductor Products Sector, had mixed reactions to Galvin's initiation of the OEP. In general, he agreed that managers had to begin looking at the business in a global context; that the business had to move from a more technical orientation to a competitive business focus; that management layers should be reduced and spans of authority increased; and that management and incentive systems should be brought into line with strategic goals. For example, Tooker explained that his sector's financial reporting systems (the P&Ls) were too focused on regional business and not tied into the global competitive context. Thus financial incentives were unfortunately determined by short-term, narrowly focused objectives. In fact, Tooker was already at work on a number of compatible initiatives when Galvin raised the subject of OEP. However, he was concerned that:

Whenever you focus on a mechanical project or talk about it in capital letters, you have to be careful it doesn't become the "program of the month." I'm not so sure I want managers to be signed up in OEP so much as I want them to be thinking about what makes them successful—to personalize it. I see OEP as a model process we can use to break inertia and to continue doing what we know we have to do. It never hurts to have the CEO interested, but it's unhealthy to just spring this on the organization. Wintermantel and Miraglia have to work with Galvin to channel this idea.

Although Tooker did not want to diffuse the energy of his efforts already underway before OEP, he encouraged operating managers to use a workshop designed by Human Resources to find new opportunities to improve effectiveness. Moreover, Tooker challenged HR to come up with a way to convey that OEP was more than a matter of organizational structure alone. And he was supportive of conducting surveys with his management group, initiated by HR, which would identify strategic and structural deficiencies. All along, however, he continued to focus more on the major organizational changes he was introducing than on OEP, per se.

Wintermantel described the sector's challenges in 1983 as follows:

Coming off a two-year slump in the semiconductor business, there was a great deal of perceived growth. But customers were actually double and triple ordering to insure delivery; there were lots of cancellations. Still, the sector wanted to believe this growth would last. In addition, as old technologies merged and new ones developed, our structure became inefficient.

In fact, earlier that year, we brought in an expert from MIT to discuss strategy and structure with the top 40 managers. We discussed a reorganization around product groups and markets rather than technologies, resulting in more, smaller groups who were more oriented to the different customers' criteria.

When Galvin presented his ideas, some in the sector were concerned that he would want to break their organization down into even smaller units than their own internally proposed reorganization required. They believed small business units were impractical because of the heavy front-end investment in equipment. They felt threatened by Galvin's promise that: "In two years, this will be a different Motorola."

But Wintermantel urged Tooker to use OEP as an incentive to implement his original reorganization plan, "to make *that* our OEP project." He worked with Tooker to define and customize OEP to fit the concerns of the sector's particular business and its current high-growth state. This apparent growth, however, both obscured any sense of urgency to reorganize and also kept Tooker and his staff fully occupied with day-to-day operations. As one sector vice president commented: "The 40% growth in 1983-84 let us cover up a lot of inefficiencies." Nevertheless, the reorganization did occur and it was Tooker who reported on it both to the Policy Committee and to the annual November Executive Conference review meetings with the chief executive officers. OEP, it seems, had been a catalyst to change the structure and to review strategic and operational priorities.

The Communications Sector

Ray Farmer, general manager in the Communications Sector, explained that he and his managers needed no convincing that they had problems. The year, 1983, had been a difficult one because they had taken the brunt of Japanese "dumping" practices in the pager business. Furthermore, operating profits had declined due to investments in new product technology and factory automation, while R&D spending rose 24%. An HR survey in 1983 revealed a consensus among the sector's top 100 managers on the need for change. Schaffer, the consultant, also noted that

Farmer's sector "was more ready for help," so he began to develop relationships there and to propose OEP projects.

Although Farmer recognized the need for improvement, he was at first suspicious of OEP. Schaffer noted that Farmer believed his sector's performance problems were only indirectly caused by organizational structure and, since he initially identified OEP as reorganization into smaller units, he was not enthusiastic. But when he saw that he could adapt OEP to what he thought were more urgent sector matters, he became more enthusiastic and teamed up with George Fisher, the new assistant general manager. Schaffer worked with Farmer, Fisher, and Craig Mudge, the HR director for the sector.

Fisher was a young, aggressive manager who had risen quickly, moving from divisional to sectorwide responsibilities in April 1984. Fisher himself stated:

For Ray to bring me into this position was a rather unorthodox move, and it communicated that nothing is certain. I was brought in with the expectation that I make changes, and I have the advantage of having been fairly low in the organization fairly recently. This means I know the inhibitors to change and the systemic problems, and I also understand the real need to do something. This understanding doesn't come easily when you're the premier business of your kind in the world.

Schaffer explained that Farmer and Fisher utilized OEP as a means to address their own agenda: to accelerate the product development cycle; to increase the likelihood of meeting business and product plans; to establish management and system controls; and to make more demands of the organization overall. Farmer noted that it was sometimes "frustrating to have to determine if our initiatives actually fit into Galvin's plan, but we had frequent review meetings with him when he would assure us that 'Yes, that's what I mean.'" Eventually Farmer concluded that, for him, OEP was a "vehicle to pull together diverse issues and to create an atmosphere conducive to constructive change."

By spring 1984, Farmer and Fisher decided to stop talking and to start acting. They used their weekly Monday morning staff meetings for 10-12 managers to "try to get them past agonizing over what OEP was and into an action mode," remarked Farmer. They presented the four-part OEP Action Framework (see *Exhibit 1*). Each manager was required to initiate work on a project that addressed some aspect of that framework. Some of them were simplistic; others were impractical. But some were genuine breakthrough projects. Farmer explained:

We were looking for projects where our operational needs coincided with divisional managers' authority. We looked for projects with the credibility to convince other managers, and we found receptive ones, such as the Mobile Division general manager in Ft. Worth, Texas.

We also looked at the sector level and made some significant changes. For example, Direct Sales for the United States was organized functionally for the entire sector, and it was a very successful area. However, the customer needs and specifics of the Cellular Radio service were unique, so we decided to split this sales group off and have them report directly to the appropriate business managers. This was revolutionary and it meant messing with a very workable and successful formula.

Again, at the sector level, we took some smaller growth-oriented groups and had them report directly to us, at the sector general manager level. We were getting away from the classic organizational chart with boxes all the same size. We were conveying that size is not the only criterion for structure.

The Mobile Division in Ft. Worth turned out to be a model of active experimentation. R. H. Schaffer & Associates sent a consulting team down to work with the on-site managers of this mobile radio products group. Senior management clearly communicated its support and specific new product development goals were identified, with each project assigned a champion or manager with ultimate responsibility. Temporary "project teams" with explicit accountabilities were established. Detailed project work plans with *real* deadlines for intermediate and final goals and with clearly monitored milestones were written. Finally, everyone had to commit to and sign off on the plan before initiating the work. These team efforts resulted not only in accelerated product development cycles but in the introduction of an effective model for demand-making and team management.

The initial success of these efforts in 1984 led to their extension into 1985. A number of new product development projects that had been lagging were accelerated, and, most notably, a new product (European Land Mobile radio) championed by John Mitchell, Motorola president, was developed in 18 months. Farmer expected that without the OEP effort, this project would have taken three years and would have cost one and a half times as much as it did. Schaffer saw this as a monumental breakthrough project, because this project, combined with others, "showed that doing things differently, they were capable of far more than what they considered 'normal'." And Mudge of HR agreed:

It helped redefine the standards of good performance in product development. Furthermore, it was achieved by a team spread out over three locations on two continents, which shows that complexity can be managed.

In addition, this effort stimulated the creation of entirely new businesses headed by entrepreneurial managers in the spirit that Galvin was urging.

OEP: Phase Three

As the Organizational Effectiveness Process entered its third year in 1985, its focus was "institutionalization" of the process, which meant communicating its successes to date and incorporating OEP into the ongoing management systems and reviews at Motorola, in an effort to "cascade the program to lower levels of management."

Each division general manager in the Communications Sector reported on the results of his or her OEP project to the sector officers and to Bob Galvin personally at a review meeting in September 1985. In addition, each manager developed an OEP Plan Book for the next year, working from a set of guidelines from Farmer, Fisher, and Mudge. This plan book was to be submitted in November, at the same time as they submitted their one-year financial plans and their quality plans. These plans would be reviewed, feedback given, and the managers would be evaluated on their results the following year. Craig Mudge was also at work on various efforts to share the success stories from the preceding year with a group of perhaps 30-40 managers via the circulation project reports among the top two or three layers of the sector management.

In the Semiconductor Products Sector, Gary Tooker and other officers presented the results of their various OEP projects to the chief executive officers and other senior managers at the annual Executive Conference meeting in November 1985. Dick Wintermantel was at work developing a "7S" model for implementation of OEP and a series of OEP workshops for communicating the OEP objectives and this model to larger groups of managers (see *Exhibit 2*).

In addition, a two-day, corporatewide Awareness Program was being planned by the Motorola training and HR team for perhaps 2,000 managers in the U.S., Europe, and Asia, to be held in early 1986. This training program was being designed to build an awareness of competitive urgency and a global outlook, with particular emphasis on the Asia challenge. The program was to

include workshops that would encourage creativity and provide specific tools to enable managers to see how they could "make a difference" for Motorola.

Joe Miraglia was developing a 1986 Goal Work Plan for OEP which covered 1986-1988. This would be revised with both Galvin's input and that of the Policy Committee. This plan would present the next objectives for the program and propose a new implementation tool—"benchmarking." Benchmarking meant finding the best competitors in any particular area and then identifying characteristics, or "benchmarks," that Motorola would need either to remain competitive or overtake them. Miraglia hoped that particular models and tools like these would facilitate the goals of training thousands of managers in the next phases of OEP.

Other measures taken in 1985 included the incorporation of OEP evaluation measures into the Motorola Executive Incentive Plan (MEIP) and the further integration of OEP into various Motorola training programs.

The 1985 assembly of the biennial Motorola Officers' Meeting provided an opportunity to review OEP's progress to date, two years after Bob Galvin's surprising initiation of the process, and to lay out the future objectives. At the meeting, Joe Miraglia gave a presentation wherein he examined the first three phases of OEP and discussed the establishment of a new "Top Ten Corporate Goal." When Motorola decided to endorse an existing initiative, it would develop a corporate goal and appoint a "champion" of that goal who would represent and promote it. Bob Galvin was named the champion of this new OEP corporate goal which read:

In support of our stated strategies, top ten corporate goal #6 states: "Refine the processes, structures, and assignments of authority and accountability for each business and function, so that well-qualified managers can most competitively anticipate, commit, and perform more profitably to each and all customers' needs."

Miraglia then went on to discuss an "Action Framework" for implementing this goal, which included suggested objectives and questions surrounding the four OEP foci: strategy, structure, process, and performance.

Despite Human Resource Staff efforts and those of many managers at the corporate and the sector level, Miraglia had many concerns about the OEP in the summer and fall of 1985, midway through its third year. He believed that 1986 was to be a key year for the program, when its goals and strategies must begin to involve thousands of middle managers. Although OEP's successes were dramatic—George Fisher commented that "more has happened in one year in the Communications Sector than in the previous five"—Miraglia was concerned about the effort:

I've been concerned about the pace of change, although Schaffer assures me that it's not been unusual for an organization this size. I think we could have moved further, more quickly if the first documents had been more clear and precise. I think we should have communicated more to more managers in all areas earlier in the process. We probably should have pushed our senior management to be even more demanding in this area. More than one senior manager has come to me to ask: "Is this just Bob's idea?" And we should have done more thinking earlier on how to fit OEP into other ongoing efforts at Motorola, especially the Participative Management Program.

Many managers shared Miraglia's concerns and criticisms of the effort. Several, at both the sector levels and on the HR team, complained that it was hard to tie OEP efforts to short-term, quantifiable kinds of results and this made these efforts difficult to evaluate and difficult to sell. Some HR representatives felt, even in 1985, that the process was too ambiguous while others praised its customizability. Almost all were concerned that without Galvin and the HR team, the process would not persevere. As George Fisher commented: "Craig, our HR manager, is the continuity here. He

keeps the subject of OEP at the forefront. Ray and I are very busy and we need the continual presence of a staff person who feels this is his most compelling assignment."

Third Quarter, 1985

As Motorola faced the fourth quarter of 1985 and the close of OEP's third phase, the company was experiencing a severe downturn in profits, particularly in the Semiconductor Products Sector. A press release issued on October 11, 1985 reported:

Motorola, Inc. today reported that sales in the third quarter declined six percent to \$1.30 billion from \$1.38 billion in the 1984 third quarter. Nine-month sales totaled \$4.00 billion, compared with \$4.05 billion in 1984.

The company had a loss in the third quarter of \$39 million, or 33 cents per share, compared with earnings of \$86 million, or 73 cents per share, in the third quarter of 1984. Nine-month earnings were \$28 million, or 24 cents per share, vs. \$262 million, or \$2.21 per share a year ago.

Reflecting on the severe slump in the semiconductor products industry and on the increasing toll that Japanese competition was taking on the firm, Bob Galvin said:

When I introduced the concept behind OEP, I was trying to anticipate this sort of crisis and to say, "Let's make changes while we are enjoying reasonably good business, instead of waiting until this third quarter of 1985." It's a bad time to start changing when you're already in bad shape. OEP was a purposeful revolution. Because of it, the Communications Sector developed new products in 1984 which give us pockets of strength to offset the current recession.

Galvin was optimistic that the OEP, having had almost three years to establish itself, would help the company through this crisis.

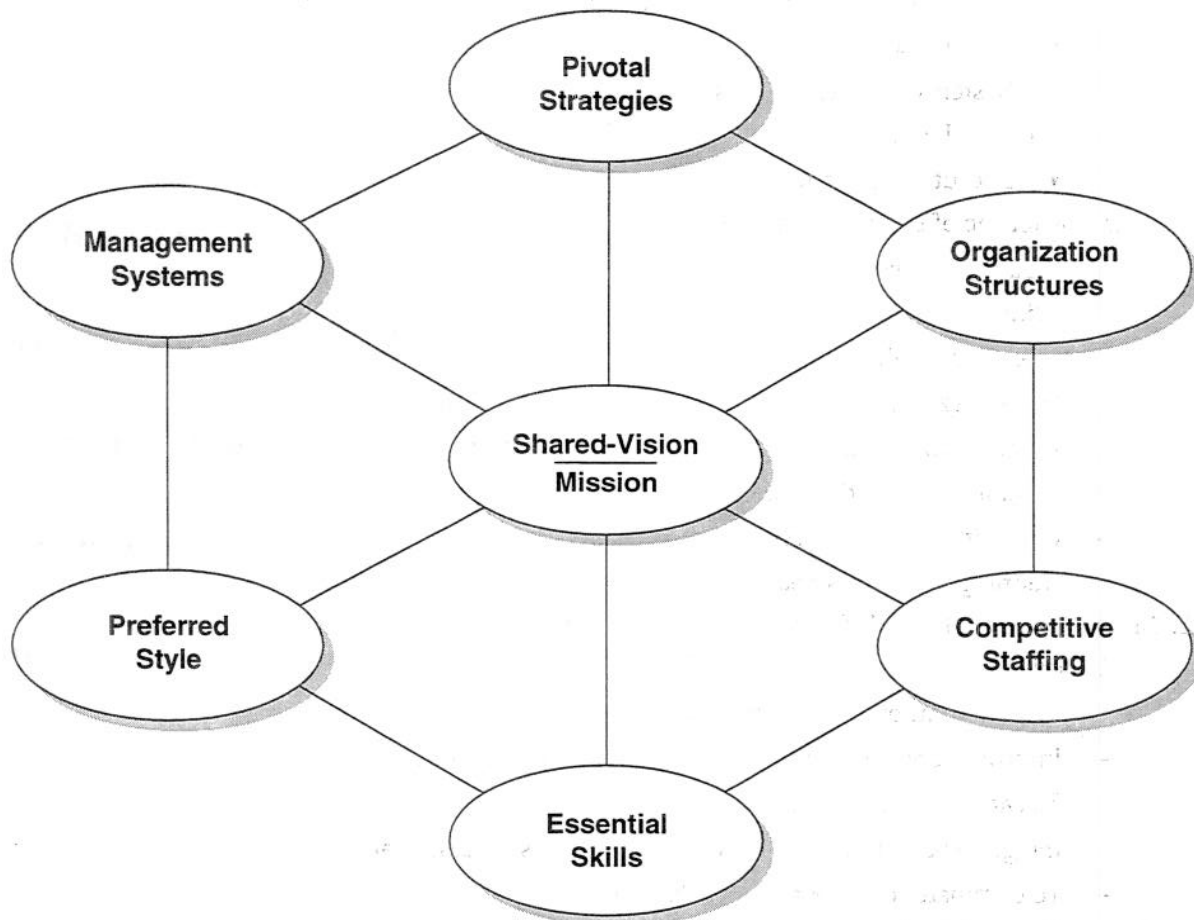
Galvin still believed that the OEP objectives could provide the momentum and the process to pull Motorola through its present difficulties. Its effectiveness, however, would depend on his officers' ability to get thousands of middle managers committed. Joe Miraglia reported that in January he asked a training group of two dozen director-level managers if they had heard of OEP and one responded affirmatively. Nine months later, 50% of a similar group reported recognition. This was progress, but was it fast enough? Miraglia feared that in its third year, OEP might have been "one of the better kept secrets at Motorola."

Exhibit 1 *Action Framework for the Organizational Effectiveness Process*

- I. Better Strategy Formulations
 - Anticipation
 - Selection
 - Commitment
 - II. Modify Organizational Structures
 - Focus Authority and Accountability
 - III. Improve Processes
 - Systems, Policies, Staffing
 - IV. Improve Performance
 - Execution to Strategy
1. Doing Better Job of Business Strategy
 - Anticipation—Selection—CommitmentIncluding:
 - Asking the right questions
 - Surveying comprehensively the opportunities and risks
 - Assessing them against the mission of the business
 - Making clear-cut decisions
 - Committing the resources
 - Defining the actions necessary for success
 2. Move Aggressively to Modify Organization Structures.
 - In Order:
 - To focus authority and responsibility
 - Improve coordination between functions and businesses
 - To carve out “independent businesses”
 - Integrate basic functions lower in the business (deaggregate)
 - To eliminate complexity and redundancy
 - To simplify decision-making and cut layers
 3. Modifying and Strengthening Processes
 - Systems, policies, staffing
 - Styles, skills
 - (infrastructure to make strategy and structure work)
 4. Doing A Better Job of Improving Performance Through “Execution to Strategy”
 - Including:
 - New product development
 - Product introductions
 - Cost competitiveness
 - Market and customer responsiveness
 - Facilities planning and construction

Exhibit 2

Semiconductor Products Sector Organization Effectiveness Model



COMMITTEE REPORT

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